



United States  
Department of  
Agriculture

Soil  
Conservation  
Service

In cooperation with  
United States Department  
of the Interior, Bureau of  
Land Management, and  
University of Nevada,  
Agricultural Experiment  
Station

# Soil Survey of Lander County, Nevada, South Part (Volume I)



# How To Use This Soil Survey

## General Soil Map

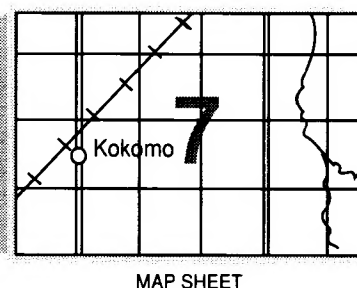
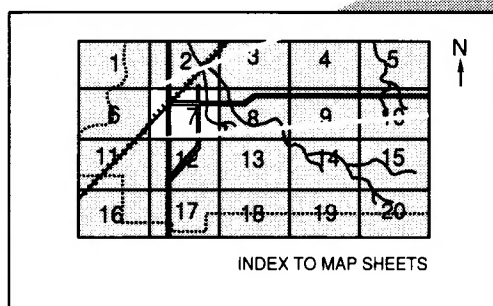
The general soil map, which is the color map preceding the detailed soil maps, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

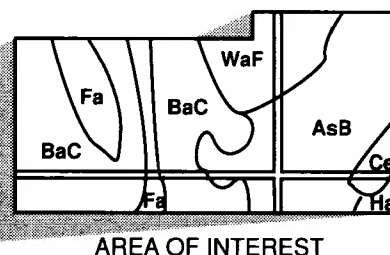
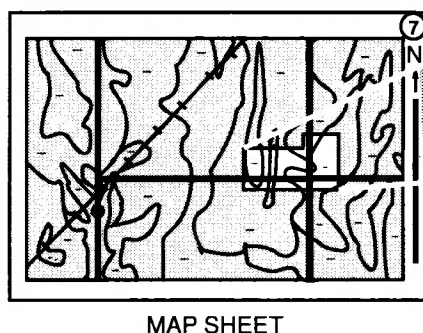
## Detailed Soil Maps

The detailed soil maps follow the general soil map. These maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**, which precedes the soil maps. Note the number of the map sheet, and turn to that sheet.



Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Index to Map Units** (see Contents), which lists the map units by symbol and name and shows the page where each map unit is described.



NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

The **Summary of Tables** shows which table has data on a specific land use for each detailed soil map unit. See **Contents** for sections of this publication that may address your specific needs.



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This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other federal agencies, state agencies including the Agricultural Experiment Stations, and local agencies. The Soil Conservation Service has leadership for the federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1984. Soil names and descriptions were approved in 1985. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1984. This survey was made cooperatively by the Soil Conservation Service; the United States Department of the Interior, Bureau of Land Management; and the University of Nevada, Agricultural Experiment Station. It is part of the technical assistance furnished to the Lander County Conservation District.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

All programs and services of the Soil Conservation Service are offered on a nondiscriminatory basis, without regard to race, color, national origin, religion, sex, age, marital status, or handicap.

**Cover:** Typical sequence of landforms in the survey area near Mount Callaghan in the Toiyabe Range, north of Austin. Grassval and Oxcorel soils are on fan piedmont remnants in the foreground; Allor, Wieland, and Zaidy soils are on fan piedmont remnants in the center; Attella, Hymas, and Xine soils are on the forested hills at the left; and Bucan, Robson, Softscrabble, Walti, and Zoesta soils are on mountains in the background.

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# Foreword


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This soil survey contains information that can be used in land-planning programs in Lander County. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

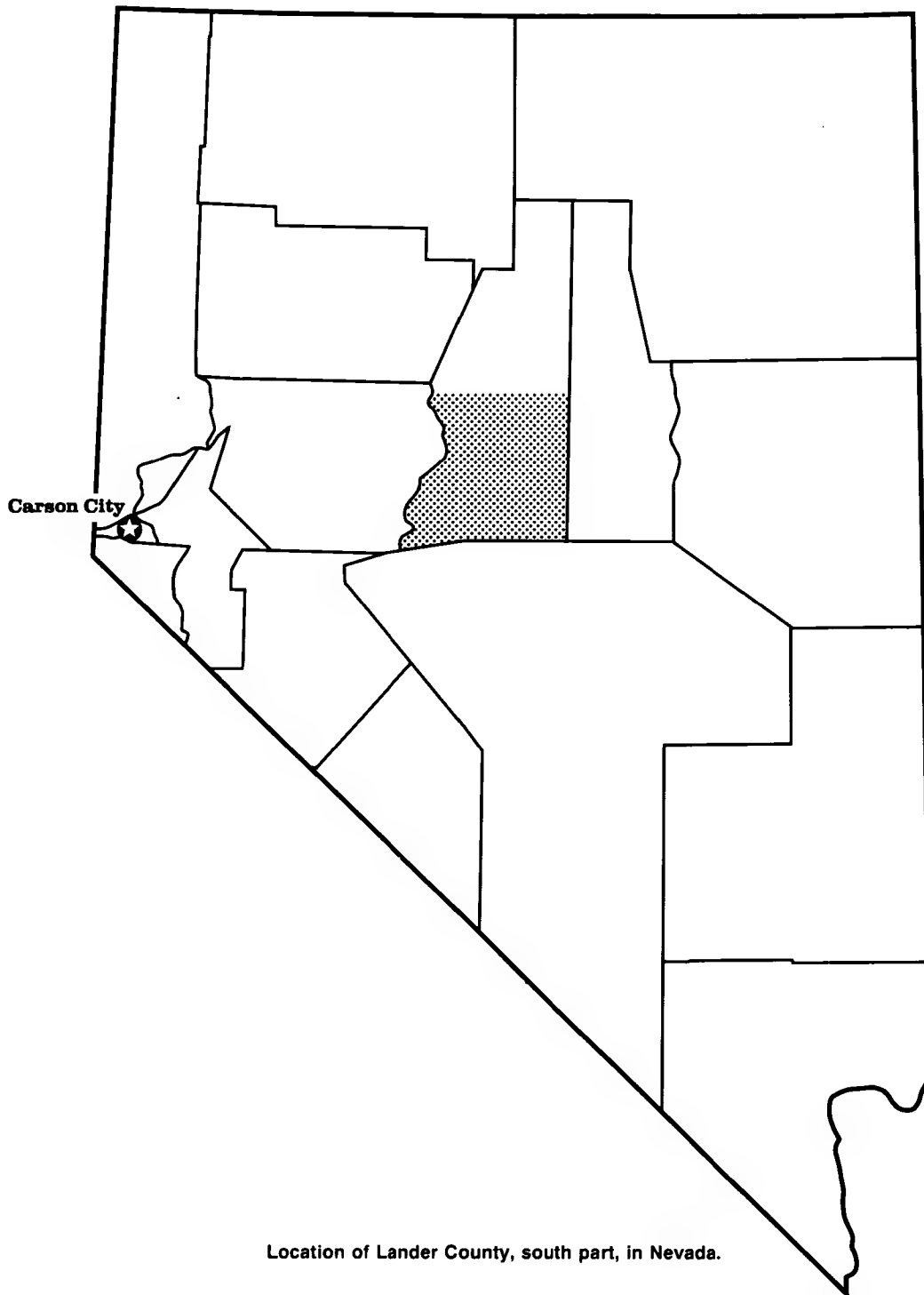
This soil survey is designed for many different users. Farmers, ranchers, foresters, and agronomists can use it to evaluate the suitability of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Soil Conservation Service or the Cooperative Extension Service.



William D. Goddard  
State Conservationist  
Soil Conservation Service



Location of Lander County, south part, in Nevada.

# Soil Survey of Lander County, Nevada, South Part

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By Carole E. Jett, Soil Conservation Service

Fieldwork by Carole E. Jett, Soil Conservation Service

United States Department of Agriculture, Soil Conservation Service,  
in cooperation with  
United States Department of the Interior, Bureau of Land Management,  
and University of Nevada, Agricultural Experiment Station

The survey area is in the central part of Nevada. It has a total area of 1,554,671 acres. Austin and Kingston are the only communities in the survey area.

The survey area consists of numerous mountain ranges and valleys that are oriented north and south. Elevations range from 8,500 feet in the mountains to 6,100 feet in the valleys. The Reese River flows northward through the central part of the area.

Public lands in the area are administered by the Bureau of Land Management and the Forest Service. Land administered by the Forest Service is not included in this survey.

The descriptions, names, and delineations of soils in this soil survey do not fully agree with those in the surveys of adjacent areas. Differences are the result of a better knowledge of soils, modifications in series concepts, and variations in the intensity of mapping or in the extent of the soils within the survey areas.

## General Nature of the Survey Area

This section gives general information about the survey area. It briefly discusses history, water supply, industries and transportation facilities, drainage, geology, and climate.

### History

Lander County was first explored in 1828 by Peter Skeen Ogden. In 1841, the first immigrants came into the area on their way to California. By 1844, the

winding course of the Humboldt River, known as the "Humboldt Trail," had become a thoroughfare for the westward procession of immigrants.

Settlement of the southern part of Lander County began with the discovery of gold in 1862, at which time the Reese River Mining District and the town of Austin were established. Completion of the transcontinental railroad in 1869 and the Nevada Central Railroad opened the area to markets in the east and west.

Mining is still a major industry in the area, but the number of operations has diminished.

### Water Supply

Irrigation water in the area is supplied by wells and streams. Water from wells is used to irrigate alfalfa and small grain in the arid valleys, and water from streams is used to irrigate native meadows and pastures along drainageways. At the higher elevations numerous small springs, seeps, and small intermittent streams provide adequate watering facilities for livestock and wildlife.

Water for the community of Austin is supplied by springs and streams. Wells and streams provide water for domestic use in rural areas.

### Industries and Transportation Facilities

The main industries in the survey area are ranching and mining.

The ranches are dominantly cow-calf operations, and the current year's crop generally is sold in fall and exported. A few herds of sheep are in the area.



Numerous mines are in the Austin area. The major minerals are gold, silver, and turquoise.

Three principal highways run through the survey area. U.S. Highway 50 runs east and west through Austin. State Highway 305 runs from north of Austin to Battle Mountain, and State Highway 376 runs from south of Highway 50 to Tonopah. Although these are the only paved roads in the survey area, many areas are accessible by dirt roads and trails suitable for four-wheel-drive vehicles.

## Drainage

A large part of the survey area is drained by the Reese River, an intermittent axial stream that flows northward through the area and joins the Humboldt River near Battle Mountain. The southeast corner of the area is drained by Stoneberger Creek, which flows northward through Monitor Valley and into the Kobeh Valley in Eureka County.

The remaining areas, including the Big Smoky, Grass, and Smith Creek Valleys, are internally drained basins, or bolsons. They are drained by intermittent streams that flow only in spring and during local thunderstorms in summer and that end in a central playa.

## Geology

The geology of the survey area is variable and complex (25).

Most outcrops of pre-Tertiary age in the area consist of sedimentary and metasedimentary rock, mainly interbedded chert, shale, argillite, greenstone, limestone, and quartzite. Most of New Pass Range and the central part of the Shoshone Mountains and Toiyabe Range consist dominantly of this rock. Soils derived from this rock include those of the Atlow, Decram, Packer, and Torro series.

The volcanic rock in the survey area consists mainly of rhyolitic and andesitic tuff, welded ashflow tuff, basalt, and related pyroclastic rock. Most of this volcanic rock is of the Miocene and Pliocene epochs. The Desatoya, Shoshone, and Simpson Park Mountains and parts of the Toiyabe Range north of Boone and Skull Creeks consist dominantly of this rock. Soils derived from this rock include those of the Akerue, Colbar, Clanalpine, Reluctan, and Walti series.

The oldest valley fill in the area is of Tertiary age. It is along both sides of the Reese River Valley, on the eastern side of Gilbert Creek, and near New Pass and Carroll Summits and Mount Airy. This valley fill is partially lithified and typically consists of siltstone,

sandstone, conglomerate, and some volcanic ash. Soils that formed in this material include those of the Genaw, Perlou, Puett, and Tessfive series.

The piedmont slopes in the valleys are made up of Quaternary alluvium that contains loess that is high in content of volcanic ash. Soils that formed in this alluvium include those of the Allor, Buffaran, Muni, Orovada, and Wieland series.

The youngest material in the area is the recent alluvium along the flood plains of the Reese River and Stoneberger Creek and on bolson floors in the Big Smoky, Grass, and Smith Creek Valleys. Soils that formed in this material are those of the Batan, Bubus, Sonoma, and Wholan series.

## Climate

In this survey area, summers are hot, especially at the lower elevations, and winters are cold. At the lower elevations, precipitation normally is light throughout the year. The land in these areas is used mainly for range. At the higher elevations, precipitation is much greater and snow accumulates to considerable depths. Much of the snowmelt is used to irrigate crops in nearby valleys.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Austin, Battle Mountain, and Central Field Laboratory. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season. The climate at Battle Mountain, which is outside the survey area, closely resembles that of the lower elevations in the northern part of the area.

In winter, the average temperature is 31 degrees F and the average daily minimum temperature is 20 degrees. The lowest temperatures on record are -30 degrees at Battle Mountain on December 9, 1972, and -28 degrees at Central Field Laboratory on December 11, 1972. In summer, the average temperature is 64 degrees and the average daily maximum temperature is about 86 degrees. The highest temperature, 109 degrees, was recorded at Battle Mountain on July 27, 1975.

Growing degree days, shown in table 1, are equivalent to "heat units." Beginning in spring, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (40 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is 14 inches at Austin and 7 inches at Battle Mountain and Central Field

Laboratory. Of this, 60 percent usually falls in April through September. The growing season for most crops falls within this period. The heaviest 1-day rainfall during the periods of record was 2.27 inches at Battle Mountain on October 12, 1963. Thunderstorms occur on about 12 days each year.

The average seasonal snowfall is 40 inches at Austin, 24 inches at Battle Mountain, and 30 inches at Central Field Laboratory. The greatest snow depth at any one time during the period of record was 23 inches at Austin. On the average, 31 days at Austin, 14 days at Battle Mountain, and 26 days at Central Field Laboratory have at least 1 inch of snow on the ground, but the number of such days varies greatly from year to year. Every few years a blizzard strikes the survey area with high winds and drifting snow. Even at the lower elevations, the snow remains on the ground for many weeks and livestock suffer.

The average relative humidity in midafternoon is about 30 percent. Humidity is higher at night, and the average at dawn is about 65 percent. The sun shines 85 percent of the time possible in summer and 60 percent in winter. The prevailing wind is from the west. Average windspeed is highest, 9 miles per hour, in spring.

## How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. The fieldwork in the northern one-third of the survey area was done by soil scientists employed by the Soil Conservation Service, and the fieldwork in the southern two-thirds of the area was done by soil scientists employed by Soil and Land Use Technology, Inc., which was under contract to the Bureau of Land Management. The soil scientists observed the steepness, length, and shape of slopes; the general pattern of drainage; the kinds of crops and native plants growing on the soils; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated parent material in which the soil formed. The unconsolidated material is devoid of roots and most other living organisms and has not been changed by other biological activity.

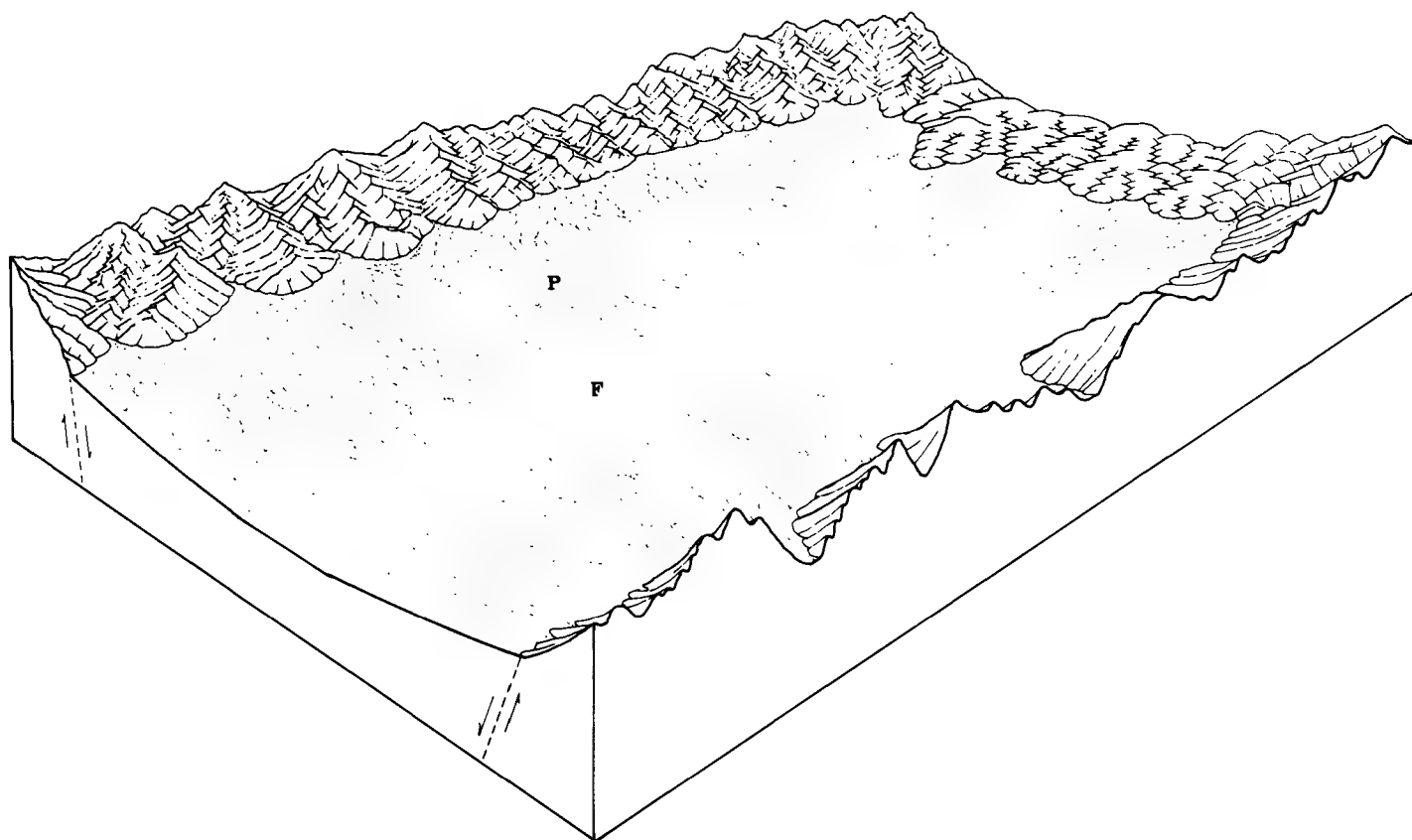
The soils and miscellaneous areas in the survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural

vegetation of the area. Each kind of soil or miscellaneous area is associated with a particular kind of landscape or with a segment of the landscape. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landscape, a soil scientist develops a concept, or model, of how they were formed. During mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes. Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. The system of taxonomic classification used in the United States is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

Because a large part of Lander County was mapped under several private contracts, some of the typical pedons described in this survey are located in the soil survey areas of Lander County, Nevada, North Part, and Eureka County Area, Nevada. As the survey progressed, it was determined that some of the soils in the area had already been mapped under contract. The typical pedon descriptions already completed for these soils were used, regardless of the survey area in which they occurred. The survey area in which the typical pedon for each taxonomic unit is located is given in the section "Taxonomic Units and Their Morphology."



**Figure 1.**—The major physiographic parts of an internally drained intermontane basin, or bolson: the piedmont slope (P) and the basin floor, or, more specifically, the bolson floor (F). This drawing shows part of an elongated bolson that has bounding mountain ranges on the near and far sides and is cut off by hills on the far end. The drainageways, shown by dotted lines, suggest positions of major landforms. Neither the playas nor the drainageways on the floor are shown.

Characteristics of the soils in a map unit in this survey area are similar but not identical to those of the soils outside the survey area.

While a soil survey is in progress, samples of some of the soils in the area are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data also are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm

records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot assure that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

## Soil Landscapes

In this soil survey the mapped areas generally represent associations of two or three soil components and other included soils of limited extent. Soil patterns commonly coincide with landforms and physiographic positions. In the section "Detailed Soil Map Units," descriptive terms are used to identify the location of individual soil components on the landscape. While there is a relationship between the landforms and soils in a given area, these relationships are not mutually exclusive. Individual soil series commonly occur on more than one component landform.

In this survey area the landforms are classified and defined according to Peterson (22). The landform

elements are described and defined in a manner precise enough to indicate where soils occur in relation to each other. The intent of this section is not to define all of the landform terms but to define briefly the main geomorphic surfaces in the survey area. All landform terms are defined in the Glossary.

The landforms of the intermontane basins are first grouped into two general classes—bolson (fig. 1) and semibolson (fig. 2). Within these two groups are three major physiographic parts (fig. 3). These are the bounding mountains, the piedmont slope, and the basin floor. The bounding mountains rise less than 1,000 feet above the surrounding boundaries. The piedmont slope and basin floor are topographic forms that slope from the bounding mountains down to a central playa.

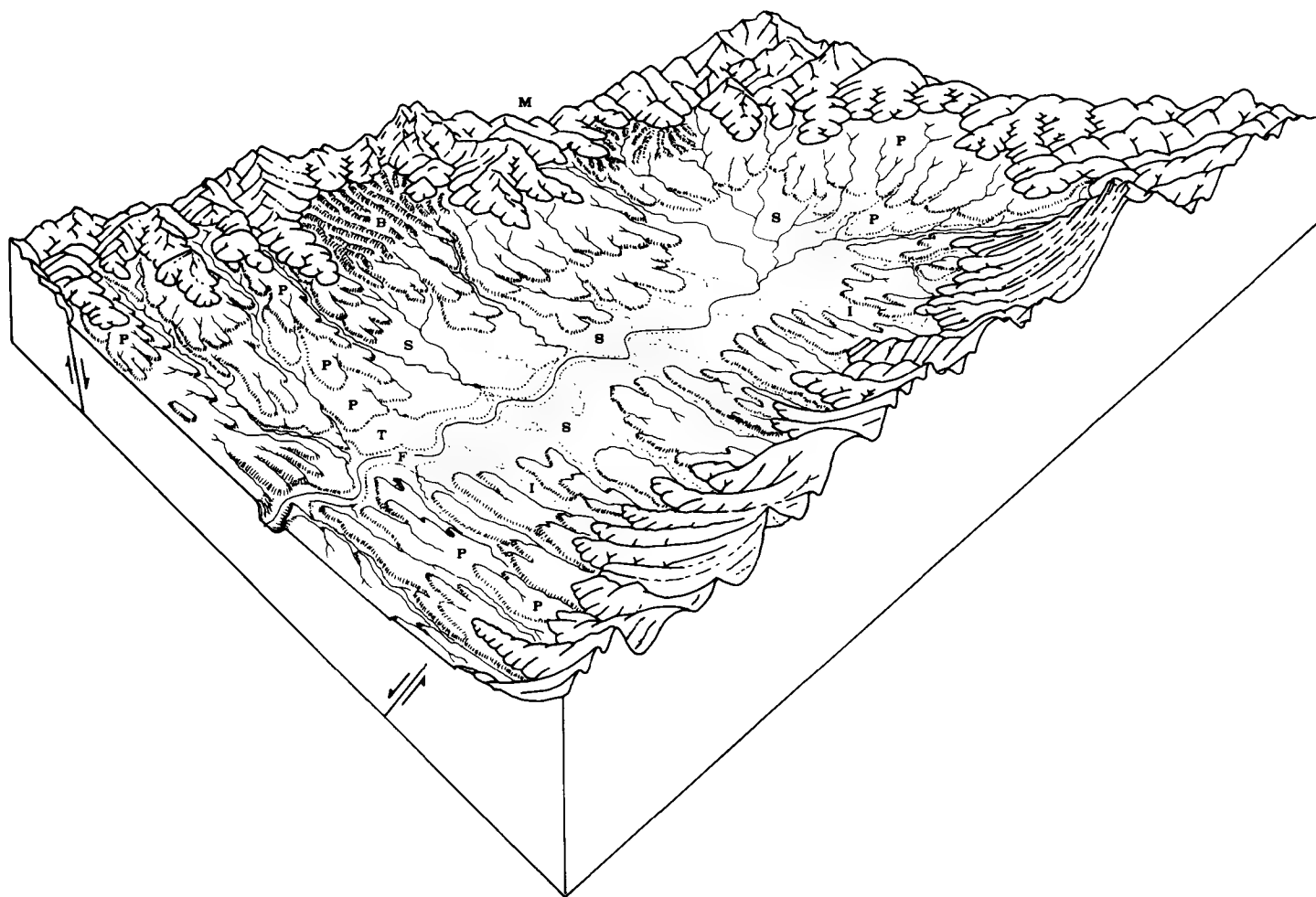
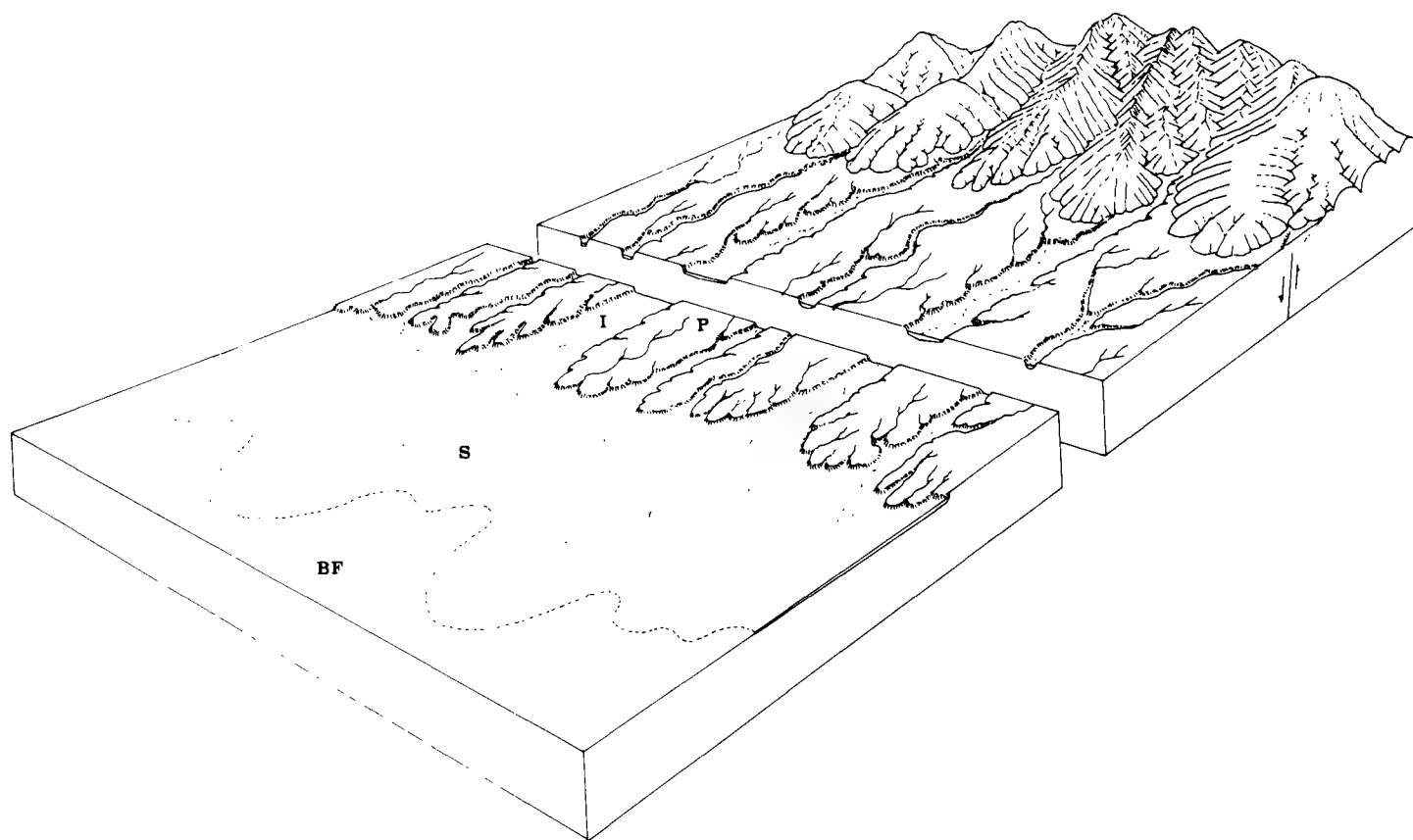


Figure 2.—A semibolson that displays the effects of several cycles of dissection and deposition. The major landforms are: ballenas (B); fan piedmonts (P), comprising several levels, or ages, of fan remnants; fan skirts (S); an axial-stream terrace (T); and an axial-stream flood plain (F). Alluvial fans are not distinguished from fan piedmonts. Component landforms of inset fans (I) are between fan remnants. The basin is bounded on two sides by mountains (M).





**Figure 3.—A fan skirt (S) that merges along its lower boundary with a basin floor (BF) and that was formed by coalescing alluvial fans originating at gullies cut in a dissected fan piedmont (P) and by debouching inset fans (I) of the fan piedmont. The erosional fan piedmont remnants and mouths of the inset fans form the upper boundary of the fan skirt. The skirt is the same age surface as the inset fans but is younger than the relict summits of the fan remnants. It may be the same age or younger than the basin floor surface, but as shown here it is younger because its alluvium overlaps the basin floor surface.**

The shapes, genetic relationships, and geographic scales of the topography seen in the field are used to classify the landforms. The two general classes—bolson and semibolson—are successively divided into smaller and genetically more homogeneous classes (charts 1 and 2). The broadest class is major physiographic parts, each of which is made up of several genetically related major landforms. These landforms in turn may be comprised of several genetically related component landforms. The component landforms are the smallest single units that one would consider in combined terms of their form, constituent materials, and genetic history. Some component landforms, such as fan piedmont remnants, have distinctive topographic parts with quite different geomorphic histories. These parts are called

landform elements. The landform elements that are erosional surfaces are subdivided into slope components.

In the section "General Soil Map Units," a landscape position is given for each major component. These generally are major physiographic parts, major landforms, or component landforms. In the section "Detailed Soil Map Units," broad landscape positions are specified for each map unit. These positions apply to the entire unit. They are major physiographic parts or major landforms. A more detailed landscape position also is given for each major component and contrasting inclusion in the map unit. These generally are component landforms, landform elements, or slope components.

CHART 1.—CLASSIFICATION OF BOLSON LANDFORMS

Landforms			Parts of landforms	
I Major physiographic part	II Major landform	III Component landform	IV Landform element	V Slope component
Bounding mountains Piedmont slope	Mountain valley fan	Erosional fan remnant	Summit	
			Side slope .....	Shoulder slope Back slope Foot slope
			Partial ballena .....	Crest Shoulder slope Back slope Foot slope
	Rock pediment	Inset fan Rock pediment remnant	Channel Channel	
			Summit .....	Crest
			Side slope .....	Shoulder slope Back slope Foot slope
	Ballena .....		Channel	
				Crest Shoulder slope Back slope Foot slope
	Alluvial fan	Inset fan Fan collar Erosional fan remnant	Channel Channel	
			Channel Summit	
			Side slope .....	Shoulder slope Back slope Foot slope
Basin floor (bolson floor)	Fan piedmont	Inset fan Erosional fan remnant	Partial ballena .....	Crest Shoulder slope Back slope Foot slope
			Channel Channel	
			Summit Side slope .....	Shoulder slope Back slope Foot slope
	Fan skirt .....	Inset fan Fan apron Nonburied fan remnant Beach terrace	Partial ballena .....	Crest Shoulder slope Back slope Foot slope
			Channel Channel	
			Summit Side slope .....	Shoulder slope Back slope Foot slope
	Alluvial flat	Relict alluvial flat Recent alluvial flat	Channel	
			Channel	
			Channel	
	Alluvial plain	Sand dune (Parna dune)	Channel	
			Channel	
			Channel	
Basin floor (bolson floor)	Sand sheet	Lake plain terrace	Interdune flat	
			Channel	
	Lake plain	Flood-plain playa	Channel	
			Channel	

CHART 2.—CLASSIFICATION OF SEMIBOLSON LANDFORMS

Landforms			Parts of landforms	
I Major physiographic part	II Major landform	III Component landform	IV Landform element	V Slope component
Bounding mountains Piedmont slope	Mountain valley fan	Erosional fan remnant	Summit	
			Side slope .....	Shoulder slope Back slope Foot slope
			Partial ballena .....	Crest Shoulder slope Back slope Foot slope
	Rock pediment	Inset fan Rock pediment remnant	Channel Channel	
			Summit .....	Crest
			Side slope .....	Shoulder slope Back slope Foot slope
	Ballena .....		Channel	
				Crest Shoulder slope Back slope Foot slope
	Alluvial fan	Inset fan Fan collar Erosion fan remnant	Channel Channel	
			Channel Summit	
			Side slope .....	Shoulder slope Back slope Foot slope
	Fan piedmont	Inset fan Erosional fan remnant	Partial ballena .....	Crest Shoulder slope Back slope Foot slope
			Channel Channel	
			Summit Side slope .....	Shoulder slope Back slope Foot slope
	Pediment	Inset fan Fan apron Nonburied fan remnant Pediment remnant	Partial ballena .....	Crest Shoulder slope Back slope Foot slope
			Channel Channel Channel Channel	
			Summit Side slope .....	Shoulder slope Back slope Foot slope
	Fan skirt .....		Channel	
			Channel	

CHART 2.—CLASSIFICATION OF SEMIBOLSON LANDFORMS—Continued

Landforms			Parts of landforms	
I Major physiographic part	II Major landform	III Component landform	IV Landform element	V Slope component
Basin floor (semibolson floor)	Alluvial flat	Relict alluvial flat	Channel	
		Recent alluvial flat	Channel	
	Alluvial plain		Summit	
	Basin floor remnant	.....	Side slope .....	Shoulder slope
				Back slope
				Foot slope
			Partial ballena .....	Crest
				Shoulder slope
				Back slope
				Foot slope
	Sand sheet	Inset fan	Channel	
		Sand dune	Channel	
	Axial-stream flood plain	Flood-plain playa	Channel	
		Stream terrace	Summit	
		River terrace	Side slope .....	Shoulder slope
				Back slope
				Foot slope



# General Soil Map Units

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The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, a map unit consists of one or more major soils or miscellaneous areas and some minor soils or miscellaneous areas. It is named for the major soils or miscellaneous areas. The soils or miscellaneous areas making up one unit can occur in other units but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils or miscellaneous areas can be identified on the map. Likewise, areas that are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

Figures 4 and 5 illustrate how the general soil map units relate to the various broad landscapes. The map units in figure 4 are representative of those on a bolson that is an internally drained intermontane basin, and the units in figure 5 are representative of those on a semibolson that is an externally drained intermontane basin.

The general map units in this survey have been grouped into general kinds of landscape for broad interpretive purposes. Each of the broad groups and the map units in each group are described in the following pages.

## Map Unit Descriptions

### Areas Dominated by Soils on Bolson and Semibolson Floors

Three map units are in this group. They make up about 11 percent of the survey area.

#### 1. Playas

This map unit is on nearly level basin floors in the sink areas of the Grass and Smith Creek Valleys. It

consists of nearly impermeable lacustrine sediment veneered by fine textured sediment or eolian sand. It is barren of vegetation. Water is ponded in areas of this unit after spring runoff in most years.

This unit makes up about 2 percent of the survey area.

This unit is unsuitable for most uses.

#### 2. Wendane-Gund-Batan

*Nearly level, very deep, somewhat poorly drained and moderately well drained soils; on alluvial flats and lake plain remnants*

This map unit is in the lower part of the Big Smoky, Grass, and Smith Creek Valleys, bordering areas of Playas. The vegetation is mainly basin wildrye, alkali bluegrass, inland saltgrass, black greasewood, and rubber rabbitbrush on the Wendane soils; basin wildrye, black greasewood, and basin big sagebrush on the Gund soils; and bottlebrush squirreltail, shadscale, bud sagebrush, and black greasewood on the Batan soils.

This unit makes up about 5 percent of the survey area.

The somewhat poorly drained Wendane and similar soils are on alluvial flats. These soils have a thin, light-colored upper layer and are dominantly stratified, medium textured and moderately fine textured throughout the profile. They are strongly affected by salt and sodium and are frequently flooded.

The somewhat poorly drained Gund and similar soils are on lake plain remnants. The upper layer of these soils is thin, light colored, and medium textured. Below this is dominantly medium textured or moderately fine textured material over fine textured lake sediment. These soils are strongly affected by salt and sodium and are rarely flooded.

The moderately well drained Batan and similar soils are on alluvial flat remnants. These soils have a thin, light-colored upper layer and are dominantly stratified, medium textured and moderately fine textured throughout the profile. They are strongly affected by salt and sodium and are not subject to flooding.

Of minor extent in this unit are Needle Peak and similar soils, Izo and similar soils, and Playas. Needle

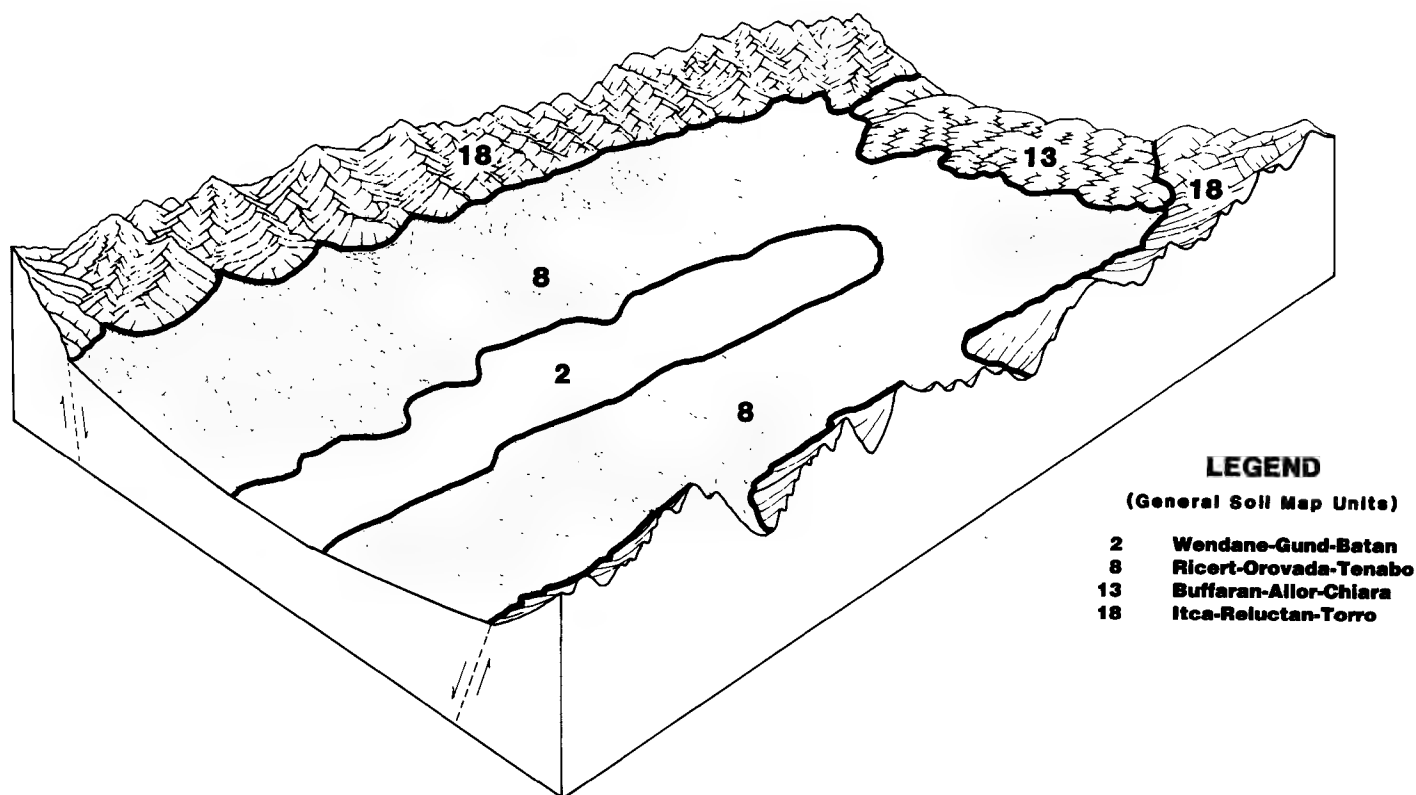


Figure 4.—General soil map units representative of those on a bolson that is an internally drained intermontane basin.

Peak and similar soils are somewhat poorly drained and occasionally flooded. They are moderately fine textured and are on low fan skirts. They are not affected by salt and sodium. They support basin big sagebrush, basin wildrye, and rubber rabbitbrush. Izo and similar soils are excessively drained and rarely flooded. They are extremely gravelly and coarse textured and are on offshore bars. They are slightly affected by salt and sodium. Areas of these soils in the Big Smoky Valley support shadscale, Bailey greasewood, and rabbitbrush, and areas in the Grass and Smith River Valleys support bottlebrush squirreltail, shadscale, and bud sagebrush. Playas are small, irregularly shaped sink areas that are ponded for brief periods, have a strong vesicular crust, and are barren of vegetation.

This unit is used for livestock grazing or wildlife habitat.

### 3. Sonoma-Wendane-Paranat

*Nearly level, very deep, poorly drained and somewhat poorly drained soils; on axial-stream flood plains and alluvial flats*

This map unit is in the central part of the survey area, along the Reese River meander belt and at the

southern end of the Grass Valley. The vegetation is mainly basin wildrye, creeping wildrye, and sedges on the Sonoma and Paranat soils and basin wildrye, alkali bluegrass, inland saltgrass, black greasewood, and rubber rabbitbrush on the Wendane soils. Flooding of the Reese River is common. It occurs in spring 1 or more years in 5 and lasts 2 days to 1 month.

This unit makes up about 4 percent of the survey area.

The poorly drained Sonoma and similar soils are on axial-stream flood plains. These soils have a thick upper layer and are dominantly stratified, medium textured and moderately fine textured throughout the profile. They generally are not affected by salt and sodium, but they are slightly affected by salt and sodium in the upper layer in some areas.

The poorly drained Wendane and similar soils are on alluvial flats. These soils have a thin, light-colored upper layer and are dominantly stratified, medium textured and moderately fine textured throughout the profile. They are strongly affected by salt and sodium. In some areas they are ponded for long periods.

The poorly drained Paranat and similar soils are on axial-stream flood plains. These soils have a thick, dark upper layer and are dominantly stratified, medium

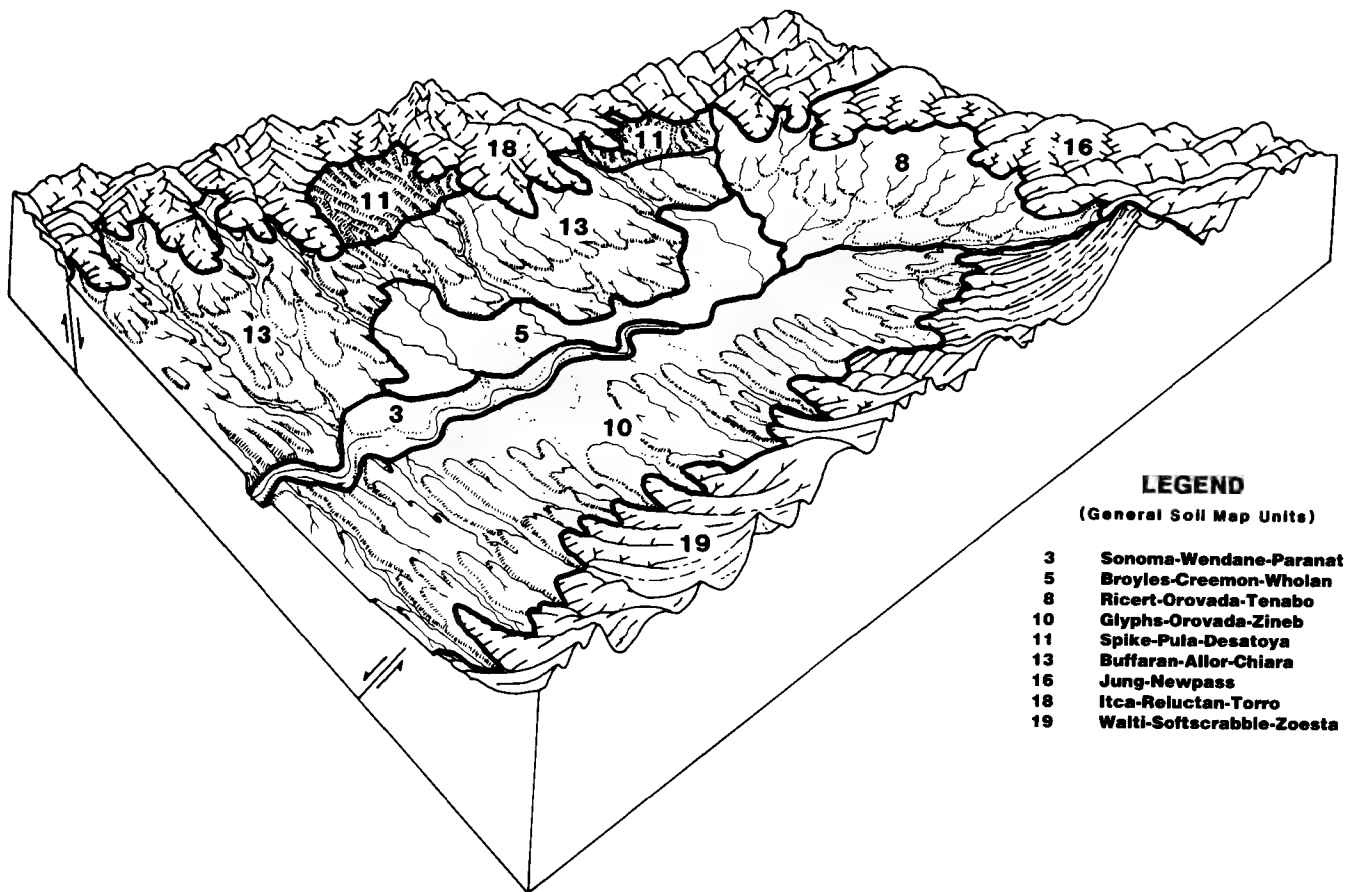


Figure 5.—General soil map units representative of those on a semibolson that is an externally drained intermontane basin.

textured and moderately fine textured material throughout the profile. They are not affected by salt and sodium.

Of minor extent in this unit are Kelk, Valmy, Bubus, the strongly saline Paranat, and similar soils. Kelk and similar soils are well drained and occasionally flooded. They are medium textured and are on alluvial flats. Valmy and similar soils are well drained and are not subject to flooding. They are moderately coarse textured or medium textured and are on narrow fan skirts. Some areas of Kelk and Valmy soils are not affected by salt and sodium, and some are slightly affected in the upper layer and strongly affected in the underlying material. Kelk and Valmy soils support basin wildrye, basin big sagebrush, and black greasewood. Bubus and similar soils are well drained and are not subject to flooding. They are moderately coarse textured or medium textured and are on alluvial flat remnants. They are strongly affected by salt and sodium. They support bottlebrush squirreltail, black greasewood, and shadscale. Paranat and similar soils

are strongly saline in the upper layer. They support alkali cordgrass, alkali bluegrass, and basin wildrye.

This unit is used for livestock grazing or wildlife habitat.

#### **Areas Dominated by Soils on Alluvial Plains, Beach Plains, and Broad Fan Skirts**

Four map units are in this group. They make up about 18 percent of the survey area.

#### **4. Laxal-Wardenot**

*Nearly level and gently sloping, very deep, somewhat excessively drained and excessively drained soils; on fan skirts and inset fans*

This map unit is along the south-central boundary of the survey area, in the Big Smoky Valley. The vegetation is mainly galleta, Indian ricegrass, shadscale, and Bailey greasewood.

This unit makes up about 5 percent of the survey area.



The somewhat excessively drained Laxal and similar soils are on the broad, lower fan skirts and inset fans. These soils have a thin, light-colored upper layer and are stratified, very gravelly, moderately coarse textured and coarse textured throughout the profile. They generally are not affected by salt and sodium, but they are slightly affected by salt in the lower part in some areas. They are rarely or occasionally flooded.

The excessively drained Wardenot and similar soils are on the upper fan skirts. These soils have a thin, light-colored upper layer and are stratified, very gravelly and coarse textured throughout the profile. They are not affected by salt and sodium and are rarely flooded.

Of minor extent in this unit are Unsel and similar soils and Tomel and similar soils. Unsel and similar soils are very deep. They are moderately fine textured in the upper part and are very gravelly and coarse textured in the lower part. They are on adjacent fan piedmont remnants on the eastern side of the Big Smoky Valley. Tomel and similar soils are shallow to a strongly cemented hardpan and are medium textured. They are on adjacent fan piedmont remnants on the western side of the Big Smoky Valley. Both of the minor soils are well drained and are not subject to flooding. They support Indian ricegrass, shadscale, and Bailey greasewood.

This unit is used for livestock grazing or wildlife habitat.

## 5. Broyles-Creemon-Wholan

*Nearly level and gently sloping, very deep, well drained soils; on fan skirts and alluvial plains*

This map unit is in the Antelope, Big Smoky, Grass, and Smith Creek Valleys. The vegetation is mainly bottlebrush squirreltail, Indian ricegrass, shadscale, and bud sagebrush on the Broyles and Creemon soils and bottlebrush squirreltail and winterfat on the Wholan soils.

This unit makes up about 4 percent of the survey area.

The nearly level or gently sloping Broyles and similar soils are on the highest fan skirts bordering fan piedmonts. These soils have a thin, light-colored, medium textured upper layer and dominantly stratified, moderately coarse textured and medium textured underlying material. Some areas of these soils are not affected by salt and sodium, and some are slightly affected by salt and sodium in the upper part and are slightly or moderately affected by salt and moderately to strongly affected by sodium in the lower part. The soils are not subject to flooding.

The nearly level Creemon and similar soils are on the lower fan skirts and alluvial plains. These soils have a

thin, light-colored, medium textured upper layer and dominantly stratified, medium textured underlying material. The soils are not affected by salt and sodium in the upper part, but they are moderately affected by salt and slightly affected by sodium in the lower part. They are not subject to flooding.

The nearly level Wholan and similar soils are on broad inset fans that shallowly dissect fan skirts and alluvial plains. These soils have a thin, light-colored, medium textured upper layer and dominantly medium textured underlying material. They are not affected by salt and sodium and are rarely flooded.

Of minor extent in this unit are Orovada, Ricert, Batan, and similar soils. Orovada and similar soils are nearly level to moderately sloping and are on fan skirts that receive additional moisture from runoff. They are medium textured and are slightly affected by salt in the lower part. They support Thurber needlegrass, bottlebrush squirreltail, and Wyoming big sagebrush. Ricert and similar soils are nearly level or gently sloping and are on adjacent fan piedmont remnants. They are medium textured and are moderately affected by salt and sodium throughout. They support bottlebrush squirreltail, shadscale, and bud sagebrush. Batan and similar soils are nearly level and are on alluvial flat remnants. They are moderately well drained and are medium textured or moderately fine textured. They are strongly affected by salt and sodium throughout. They support bottlebrush squirreltail, shadscale, and black greasewood.

## 6. McConnel-Rasille-Wholan

*Nearly level to moderately sloping, very deep, somewhat excessively drained and well drained soils; on beach plains and fan skirts*

This map unit is in the Smith Creek Valley. The vegetation is mainly Indian ricegrass, bluegrass, and Wyoming big sagebrush on the McConnel and Rasille soils and Indian ricegrass and winterfat on the Wholan soils.

This unit makes up about 6 percent of the survey area.

The gently sloping or moderately sloping, somewhat excessively drained McConnel and similar soils are on offshore bars of beach plains that follow the contour of the shoreline. These soils are moderately coarse textured or medium textured over extremely gravelly, coarse textured lacustrine beach sediment. They are not affected by salt and sodium and are not subject to flooding.

The nearly level, well drained Rasille and similar soils are on fan skirts and in lagoons of beach plains. These soils are medium textured throughout the profile. They

are not affected by salt and sodium and are rarely flooded.

The nearly level, well drained Wholan and similar soils are on inset fans of beach plains. These soils are medium textured throughout the profile. They are not affected by salt and sodium in the upper part, but they are slightly affected by salt in the lower part. They are rarely flooded.

Of minor extent in this unit are Allor, Misad, Bubus, and similar soils. Allor and similar soils are gently sloping or moderately sloping and are on fan piedmont remnants. They are moderately fine textured and are not affected by salt and sodium. They support Indian ricegrass and Wyoming big sagebrush. Misad and similar soils are gently sloping and are on offshore bars. They are very gravelly and medium textured and are slightly affected by salt and sodium. They support bottlebrush squirreltail, shadscale, and bud sagebrush. Bubus and similar soils are nearly level and are on the lower fan skirts. They are medium textured and are slightly to strongly affected by salt and sodium. They support bottlebrush squirreltail, shadscale, and black greasewood. All of the minor soils are well drained, and none is subject to flooding.

This unit is used for livestock grazing or wildlife habitat.

#### **7. Rutab-Orovada-Wholan**

*Nearly level, very deep, well drained soils; on fan skirts*

This map unit is in the southern part of the survey area, in the Monitor and Reese River Valleys. The vegetation is mainly Indian ricegrass, bluegrass, and Wyoming big sagebrush on the Rutab and Orovada soils and Indian ricegrass and winterfat on the Wholan soils.

This unit makes up about 3 percent of the survey area.

The Rutab and similar soils are on fan skirts. These soils are moderately coarse textured or medium textured in the upper part and are extremely gravelly and coarse textured in the lower part. They are slightly affected by salt in the lower part and are not subject to flooding.

The Orovada and similar soils are on fan skirts. These soils are moderately coarse textured or medium textured throughout the profile. They are slightly affected by salt in the lower part and are rarely flooded.

The Wholan and similar soils are on inset fans of fan skirts. These soils are medium textured throughout the profile. They are slightly affected by salt in the lower part and are rarely flooded.

Of minor extent in this unit are Rotinom, Glyphs, Allor, and similar soils. Rotinom and similar soils are

well drained, occasionally flooded, and medium textured. They are nearly level and are on stream terraces along the Stoneberger Creek flood plain. They are not affected by salt and sodium in the upper part, but they are slightly affected by sodium in the lower part. They support bottlebrush squirreltail, Indian ricegrass, shadscale, and bud sagebrush. Glyphs, Allor, and similar soils are well drained, are not subject to flooding, and are medium textured. They are gently sloping and are on fan piedmont remnants. They are not affected by salt and sodium. They support bluegrass, needleandthread, and Wyoming big sagebrush.

This unit is used for livestock grazing or wildlife habitat.

#### **Areas Dominated By Soils on Piedmont Slopes and Adjacent Fan Skirts**

Six map units are in this group. They make up about 37 percent of the survey area.

#### **8. Ricert-Orovada-Tenabo**

*Gently sloping and moderately sloping, shallow and very deep, well drained soils; on fan piedmont remnants, fan skirts, and inset fans of lower piedmont slopes*

This map unit is in the Antelope, Big Smoky, Grass, Reese River, and Smith Creek Valleys. The vegetation is mainly bottlebrush squirreltail, Indian ricegrass, shadscale, and bud sagebrush on the Ricert and Tenabo soils and bluebunch wheatgrass, Thurber needlegrass, and Wyoming big sagebrush on the Orovada soils.

This unit makes up about 6 percent of the survey area.

The gently sloping or moderately sloping, very deep Ricert and similar soils are on the lower fan piedmont remnants. The upper layer of these soils is thin, light colored, and medium textured. The next layer is moderately fine textured and is moderately affected by sodium. The lower layer is very gravelly and moderately coarse textured. It is slightly affected by salt and strongly affected by sodium.

The gently sloping or moderately sloping, very deep Orovada and similar soils are on fan skirts and inset fans. The upper layer of these soils is thin and moderately coarse textured. Below this is dominantly stratified, moderately coarse textured and medium textured material that is slightly to moderately affected by salt.

The gently sloping, shallow Tenabo and similar soils are on the higher fan piedmont remnants. The upper layer of these soils is thin, light colored, and medium textured. The next layer is moderately fine textured

material that is slightly or moderately affected by sodium. Below this is an indurated hardpan.

Of minor extent in this unit are Broyles, Hessing, Allor, and similar soils. Broyles, Hessing, and similar soils are very deep, well drained, and medium textured. They are nearly level or gently sloping and are on the lower inset fans and the margins of fan skirts. They are slightly affected by salt and sodium in the upper part and are slightly to moderately affected by salt and moderately to strongly affected by sodium in the lower part. They support bottlebrush squirreltail, Indian ricegrass, and shadscale. Allor and similar soils are very deep and well drained. They are gently sloping or moderately sloping and are on the higher fan piedmont remnants. They are moderately fine textured over very gravelly material in the lower part. They are not affected by salt and sodium. They support bottlebrush squirreltail and black sagebrush. None of the minor soils is subject to flooding.

This unit is used for livestock grazing or wildlife habitat.

### 9. Muni-Glyphs-Orovada

*Nearly level to moderately sloping, shallow and very deep, well drained soils; on fan piedmont remnants and fan skirts*

This map unit is in the southern part of the survey area, flanking the sides of the Monitor Valley and in small areas in the Reese River Valley. The vegetation is mainly bluegrass, Indian ricegrass, needlegrass, and Wyoming big sagebrush.

This unit makes up about 10 percent of the survey area.

The gently sloping or moderately sloping, shallow Muni and similar soils are on fan piedmont remnants. These soils have a thin, medium textured upper layer. Below this is gravelly, medium textured to moderately fine textured material over a strongly silica-cemented hardpan. The soils are not affected by salt and sodium.

The gently sloping or moderately sloping, very deep Glyphs and similar soils are on broad fan piedmont remnants. The upper layer of these soils is thin, gravelly, and medium textured. The next layer is gravelly and moderately fine textured. The lower layer is gravelly and moderately coarse textured or medium textured. The soils are not affected by salt and sodium.

The nearly level or gently sloping, very deep Orovada and similar soils are on fan skirts. The upper part of these soils is thin and medium textured. Below this is moderately coarse or medium textured material that is slightly affected by salt.

Of minor extent in this unit are Broyles and similar soils and Unius and similar soils. Broyles and similar

soils are very deep, moderately coarse textured, and nearly level and are on the margins of the lower fan skirts. They support bottlebrush squirreltail, Indian ricegrass, shadscale, and bud sagebrush. They are slightly or moderately affected by salt and sodium. Unius and similar soils are shallow and moderately sloping and are on fan piedmont remnants. They are moderately coarse textured over a strongly silica-cemented hardpan. They support needleandthread, bluegrass, Indian ricegrass, and black sagebrush. They are not affected by salt and sodium.

This unit is used for livestock grazing or wildlife habitat.

### 10. Glyphs-Orovada-Zineb

*Gently sloping and moderately sloping, very deep, well drained soils; on fan piedmont remnants, fan skirts, and fan aprons*

This map unit is on the eastern side of the Reese River Valley. The vegetation is mainly Indian ricegrass, bluegrass, and Wyoming big sagebrush.

This unit makes up about 4 percent of the survey area.

The gently sloping or moderately sloping Glyphs and similar soils are on broad fan piedmont remnants. The upper layer of these soils is thin, gravelly, and medium textured. The next layer is moderately fine textured. The lower layer is gravelly and moderately coarse textured or medium textured. The soils are not affected by salt and sodium.

The gently sloping Orovada and similar soils are on fan skirts. The upper layer of these soils is thin and moderately coarse textured. Below this is dominantly stratified, moderately coarse textured and medium textured material that is slightly affected by salt.

The gently sloping Zineb and similar soils are on fan aprons. The upper layer of these soils is light colored, gravelly, and moderately coarse textured. Below this is dominantly stratified, very gravelly and extremely gravelly, moderately coarse textured and medium textured material. The soils are not affected by salt and sodium.

Of minor extent in this unit are Desatoya and similar soils and Jesse Camp and similar soils. Desatoya and similar soils are very deep and well drained and are on the highest fan piedmont remnants. They are thin, light colored, gravelly, and medium textured in the upper layer; thin and fine textured in the next layer; and very gravelly and moderately coarse textured in the lower layer. They support Indian ricegrass, needleandthread, and black sagebrush. Jesse Camp and similar soils are very deep and well drained. They are nearly level and are on inset fans near the front of mountains. They are

coarse textured or medium textured throughout the profile and are very gravelly in some areas. They are rarely flooded. They support basin wildrye, bluegrass, and basin big sagebrush.

This unit is used for livestock grazing or wildlife habitat.

### 11. Spike-Pula-Desatoya

*Strongly sloping to steep, very deep, well drained soils; on fan piedmont remnants and partial ballenas*

This map unit is in the north-central part of the survey area, in the Reese River Valley. The vegetation is mainly Indian ricegrass, galleta, Wyoming big sagebrush, and shadscale on the Spike soils; Indian ricegrass, needleandthread, and Wyoming big sagebrush on the Pula soils; and Indian ricegrass, needleandthread, and black sagebrush on the Desatoya soils.

This unit makes up about 3 percent of the survey area.

The steep Spike and similar soils are on south-facing side slopes of deeply incised fan piedmont remnants and partial ballenas. The upper layer of these soils is thin, very gravelly, and moderately coarse textured. The next layer is very gravelly and moderately fine textured. The lower layer is extremely gravelly and moderately coarse textured. These soils are slightly to moderately affected by salt and slightly affected by sodium below the upper layer.

The moderately steep or steep Pula and similar soils are on concave, north-facing side slopes of fan piedmont remnants. The upper layer of these soils is thin, very gravelly, and medium textured. The next layer is very gravelly and fine textured. The lower layer is very gravelly and medium textured. The soils are not affected by salt and sodium.

The strongly sloping to steep Desatoya and similar soils are on summits and convex side slopes of fan piedmont remnants. The upper layer of these soils is thin, gravelly, and medium textured. The next layer is thin and fine textured. The lower layer is very gravelly and moderately coarse textured or medium textured. It is slightly or moderately affected by salt.

Of minor extent in this unit are Grassval, Buffaran, Orovada, and similar soils. Grassval and similar soils are gently sloping and shallow and are on the lower summits of fan piedmont remnants. They are moderately fine textured in the lower part over a thick, indurated hardpan. They support Indian ricegrass, bottlebrush squirreltail, and black sagebrush. Buffaran and similar soils are gently sloping and shallow and are on the higher summits of fan piedmont remnants. They are fine textured in the lower part over a thick,

indurated hardpan. They support Indian ricegrass, bluegrass, and Wyoming big sagebrush. Orovada and similar soils are gently sloping and very deep and are on inset fans. They are gravelly and medium textured throughout the profile. They support Indian ricegrass, needlegrass, bluegrass, and big sagebrush.

This unit is used for livestock grazing or wildlife habitat.

### 12. Grassval-Oxcorel-Allor

*Gently sloping to strongly sloping, shallow and very deep, well drained soils; on fan piedmont remnants*

This map unit is at the southern end of the Grass Valley and in the alluvial divide between the Simpson Park Mountains and the Toquima Range. The vegetation is mainly Indian ricegrass, bluegrass, and black sagebrush on the Grassval soils; bottlebrush squirreltail, Indian ricegrass, shadscale, and bud sagebrush on the Oxcorel soils; and Thurber needlegrass, bluegrass, and Wyoming big sagebrush on the Allor soils.

This unit makes up about 5 percent of the survey area.

The gently sloping to strongly sloping, shallow Grassval and similar soils are on the higher fan piedmont remnants. The upper part of these soils is thin, light colored, and medium textured. Below this is moderately fine textured material over an indurated hardpan. The soils are not affected by salt and sodium.

The gently sloping or moderately sloping, very deep Oxcorel and similar soils are on the lower fan piedmont remnants. The upper part of these soils is thin, light colored, and medium textured. The next layer is fine textured and is slightly affected by salt and moderately affected by sodium. The lower layer is very gravelly and moderately coarse textured or medium textured. It is strongly affected by salt and sodium.

The gently sloping to strongly sloping, very deep Allor and similar soils are on fan piedmont remnants. The upper layer of these soils is thin, gravelly, and medium textured. The next layer is gravelly and moderately fine textured. The lower layer is gravelly and moderately coarse textured or medium textured. The soils are not affected by salt and sodium.

Of minor extent in this unit are Tenabo, Broyles, Orovada, and similar soils. Tenabo and similar soils are shallow and well drained and are on fan piedmont remnants. The lower part of these soils is moderately fine textured material that is sodium affected over an indurated hardpan. Tenabo and similar soils support bottlebrush squirreltail, shadscale, and bud sagebrush. Broyles and similar soils are very deep, well drained, and medium textured. They are nearly level and are on

slightly convex fan skirts. They are slightly affected by salt and sodium. They support Indian ricegrass, shadscale, and bud sagebrush. Orovada and similar soils are very deep, well drained, and medium textured. They are gently sloping and are on inset fans. They are rarely flooded and are not affected by salt and sodium. They support Thurber needlegrass, bluebunch wheatgrass, and Wyoming big sagebrush.

This unit is used for livestock grazing or wildlife habitat.

### 13. Buffaran-Allor-Chiara

*Gently sloping to strongly sloping, shallow and very deep, well drained soils; on fan piedmont remnants and ballenas*

This map unit is mainly in the Smith Creek Valley and in the alluvial divide between the Shoshone and New Pass Mountains, but small areas are in the Antelope, Grass, and Reese River Valleys. The vegetation is mainly bluegrass, Indian ricegrass, Thurber needlegrass, and Wyoming big sagebrush.

This unit makes up about 9 percent of the survey area.

The gently sloping or moderately sloping, shallow Buffaran and similar soils are on the higher summits of fan piedmont remnants and ballenas. The upper layer of these soils is thin, light colored, stony, and medium textured. Below this is fine textured material over an indurated hardpan. The soils are not affected by salt and sodium.

The gently sloping to strongly sloping, very deep Allor and similar soils are on the broad, lower fan piedmont remnants. The upper layer of these soils is thin, gravelly, and medium textured. The next layer is gravelly and moderately fine textured. The lower layer is gravelly and moderately coarse textured or medium textured. The soils are not affected by salt and sodium.

The strongly sloping, shallow Chiara and similar soils are on shoulder slopes of fan piedmont remnants. These soils are light colored and medium textured over an indurated hardpan. They are not affected by salt and sodium.

Of minor extent in this unit are Filiran, Pineval, Oxcorel, and similar soils. Filiran and similar soils are nearly level and moderately deep. They are on broad, slightly concave fan piedmont remnants along Iowa Canyon. They have an upper layer that is thin and light colored. Below this is a thick layer of material that is slightly affected by salt and moderately affected by sodium over a strongly cemented hardpan. Pineval and similar soils are very deep, very gravelly, and moderately coarse textured or medium textured. They are nearly level or gently sloping and are on the lower

inset fans and fan skirts. They are not affected by salt and sodium. They support bottlebrush squirreltail, Indian ricegrass, and Wyoming big sagebrush. Oxcorel and similar soils are very deep and gently sloping. They are on dissected, convex fan piedmont remnants. They have an upper layer that is thin, light colored, and medium textured. The next layer is fine textured and moderately affected by sodium. The lower layer is slightly affected by salt and strongly affected by sodium. Oxcorel and similar soils support Indian ricegrass, shadscale, and bud sagebrush.

This unit is used for livestock grazing or wildlife habitat.

### Areas Dominated by Soils On Foothills and Low Mountains

Four map units are in this group. They make up about 15 percent of the survey area.

### 14. Tessfive-Puett-Genaw

*Gently sloping to moderately steep, shallow, well drained soils; on foothills and rock pediments*

This map unit is in small areas in the northern part of the Reese River Valley. The vegetation is mainly Indian ricegrass, Thurber needlegrass, and black sagebrush on the Tessfive soils; Indian ricegrass, black sagebrush, and Wyoming big sagebrush on the Puett soils; and bluebunch wheatgrass, Thurber needlegrass, and Wyoming big sagebrush on the Genaw soils.

This unit makes up about 2 percent of the survey area.

The gently sloping to moderately steep Tessfive and similar soils are on convex summits, shoulder slopes, and side slopes of rolling foothills. These soils are gravelly and medium textured over semiconsolidated sedimentary rock.

The strongly sloping or moderately steep Puett and similar soils are on eroded, convex side slopes of rolling foothills. These soils are light colored and medium textured over soft, semiconsolidated sedimentary rock.

The moderately steep Genaw and similar soils are on concave side slopes of rock pediments. The upper layer of these soils is thin, gravelly, and medium textured. Below this is gravelly, medium textured or moderately fine textured material over soft, semiconsolidated sedimentary rock.

Of minor extent in this unit are Atlow, Koynik, Perlcor, and similar soils. Atlow and similar soils are shallow, very gravelly, and medium textured. They are on stable summits of rolling foothills. They support Indian ricegrass, Sandberg bluegrass, and black sagebrush. Koynik and similar soils are shallow and medium textured over interbedded hard limestone and Tertiary

sediment. They are on concave side slopes of foothills. They support Sandberg bluegrass and Utah juniper. Perl and similar soils are shallow and medium textured. They are on the lower summits of rolling foothills. They support Indian ricegrass, shadscale, and bud sagebrush.

This unit is used for livestock grazing or wildlife habitat.

### 15. Old Camp-Colbar-Newpass

*Strongly sloping to steep, shallow and moderately deep, well drained soils; on foothills*

This map unit is in the northwestern part of the survey area, in the New Pass and Shoshone Mountains. The vegetation is mainly pine bluegrass, Thurber needlegrass, and Wyoming big sagebrush.

This unit makes up about 3 percent of the survey area.

The moderately steep or steep, shallow Old Camp and similar soils are on foothills. These soils are thin, very gravelly and very cobbly, medium textured material over hard bedrock. They are not affected by salt and sodium.

The moderately steep, moderately deep Colbar and similar soils are on the lower north- and east-facing side slopes of foothills. The upper layer of these soils is thin, very cobbly, and medium textured. Below this is gravelly, moderately fine textured material over hard bedrock. The soils are not affected by salt and sodium.

The strongly sloping, moderately deep Newpass and similar soils are on summits and the higher north- and east-facing side slopes of foothills. The upper layer of these soils is thin, very gravelly, and medium textured. The next layer is fine textured and is slightly affected by sodium. Below this is a thin, strongly cemented hardpan over hard bedrock.

Of minor extent in this unit are Laped and similar soils and Rock outcrop. Laped and similar soils are shallow and medium textured. They are on low summits of foothills. They support Indian ricegrass, shadscale, and bud sagebrush. Rock outcrop occurs as scattered barren peaks.

This unit is used for livestock grazing or wildlife habitat.

### 16. Jung-Newpass

*Strongly sloping and moderately steep, shallow and moderately deep, well drained soils; on foothills*

This map unit is in the central Shoshone Mountains. The vegetation is mainly pine bluegrass, Thurber needlegrass, and black sagebrush on the Jung soils

and pine bluegrass, Thurber needlegrass, and Wyoming big sagebrush on the Newpass soils.

This unit makes up about 4 percent of the survey area.

The strongly sloping and moderately steep, shallow Jung and similar soils are on rounded, convex summits and south- and west-facing side slopes of rolling foothills. The upper layer of these soils is thin, very cobbly, and medium textured. Below this is very cobbly, fine textured material over hard bedrock. The soils are not affected by salt and sodium.

The moderately steep, moderately deep Newpass and similar soils are on north- and east-facing side slopes of rolling foothills. The upper layer of these soils is thin, very gravelly, and medium textured. The next layer is fine textured and is slightly affected by sodium. Below this is a thin, strongly cemented hardpan over hard bedrock.

Of minor extent in this unit are Itca and similar soils, Old Camp and similar soils, and Rock outcrop. Itca and similar soils are shallow, very gravelly, and medium textured. They are steep and are on concave side slopes of mountains. They support bluebunch wheatgrass, mountain big sagebrush, singleleaf pinyon, and Utah juniper. Old Camp and similar soils are shallow, very gravelly, and medium textured or moderately fine textured. They are moderately sloping to moderately steep and are on the lower summits and convex side slopes of mountains. They support pine bluegrass, Thurber needlegrass, and Wyoming big sagebrush. Rock outcrop occurs as scattered barren peaks.

This unit is used for livestock grazing or wildlife habitat.

### 17. Akerue-Simpark-Punchbowl

*Gently sloping to moderately steep, shallow, well drained soils; on low mountains*

This map unit is in the Simpson Park Mountains and the northeastern part of the Toiyabe Range. The vegetation is mainly Indian ricegrass, needleandthread, and black sagebrush.

This unit makes up about 6 percent of the survey area.

The moderately steep Akerue and similar soils are on shoulder slopes and upper side slopes of low mountains. The upper layer of these soils is very stony and medium textured. The next layer is very cobbly and fine textured. Below this is a thin, indurated hardpan over bedrock.

The gently sloping to moderately steep Simpark and similar soils are on the broad upper summits and the

lower side slopes of low mountains. The upper layer of these soils is very stony and moderately coarse textured. The next layer is very cobbly and medium textured. Below this is an indurated hardpan over bedrock.

The strongly sloping Punchbowl and similar soils are on the lower summits and shoulder slopes of low mountains above rimrock. The upper layer of these soils is thin, very gravelly or extremely stony, and medium textured. Below this is gravelly, medium textured material over hard bedrock.

Of minor extent in this unit are Robson and similar soils, Rock outcrop, Duco and similar soils, and Nobuck and similar soils. Robson and similar soils are shallow, very cobbly, and fine textured. They are on north-facing shoulder slopes of mountains. They support Thurber needlegrass, bluegrass, and low sagebrush. Rock outcrop occurs as rimrock along shoulder slopes of mountains and as cliffs on eroded side slopes of mountains. Areas of Rock outcrop are barren. Duco and similar soils are shallow, very gravelly, and medium textured. They are moderately sloping to steep and are on crests of mountains. They support pine bluegrass, mountain big sagebrush, singleleaf pinyon, and Utah juniper. Nobuck and similar soils are moderately deep, very gravelly, and medium textured. They are on steep, north-facing side slopes of mountains in areas where snow accumulates. They support bluebunch wheatgrass, bluegrass, and big sagebrush.

This unit is used mainly for livestock grazing or wildlife habitat.

### **Areas Dominated by Soils On Mountains**

Three map units are in this group. They make up about 19 percent of the survey area.

#### **18. Itca-Reluctan-Torro**

*Moderately steep and steep, shallow, moderately deep, and very deep, well drained soils; on mountains*

This map unit is in all of the mountain ranges in the survey area. The vegetation is mainly bluegrass, mountain big sagebrush, and singleleaf pinyon on the Itca soils and bluebunch wheatgrass, Idaho fescue, and mountain big sagebrush on the Reluctan and Torro soils.

This unit makes up about 9 percent of the survey area.

The moderately steep or steep, shallow Itca and similar soils are on convex crests and mainly the east-facing and higher south- and west-facing side slopes of mountains. The upper layer of these soils is thick, dark, very cobbly, and medium textured. Below this is very gravelly, fine textured material over hard bedrock.

The moderately steep or steep, moderately deep Reluctan and similar soils are on the higher, concave, north- and east-facing side slopes of mountains. The upper layer of these soils is thick, dark, very gravelly or very cobbly, and medium textured. Below this is gravelly, moderately fine textured material over hard bedrock.

The steep, very deep Torro and similar soils are on concave, west- and south-facing side slopes of mountains. The upper layer of these soils is thick, dark, very gravelly or extremely gravelly, and medium textured. The lower layer is extremely gravelly and medium textured or moderately fine textured.

Of minor extent in this unit are Walti, Clanalpine, Roca, and similar soils, Rock outcrop, and Welch and similar soils. Walti and similar soils are moderately deep, fine textured, and moderately sloping. They are on crests of mountains. They support Idaho fescue, bluebunch wheatgrass, and low sagebrush. Clanalpine and similar soils are moderately deep, very gravelly, and moderately fine textured. They are on the highest north- and west-facing shoulder slopes and side slopes of mountains below areas of Rock outcrop. They support Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, and singleleaf pinyon. Roca and similar soils are moderately deep, very gravelly, and fine textured. They are steep and are on the concave, lower, south-facing side slopes of mountains. They support bluegrass, bluebunch wheatgrass, and Wyoming big sagebrush. Rock outcrop occurs as rimrock along shoulder slopes of mountains, as cliffs along canyon walls, and as scattered peaks. Areas of Rock outcrop are barren. Welch and similar soils are nearly level to gently sloping and are in intermountain drainageways and riparian areas. They support basin wildrye and basin big sagebrush in areas where the channel has been subject to entrenchment and bluegrass, hairgrass, rush, and sedges in undrained areas.

This unit is used for livestock grazing or wildlife habitat.

#### **19. Walti-Softscrabble-Zoesta**

*Strongly sloping and moderately steep, moderately deep and very deep, well drained soils; on high mountains*

This map unit is in the Simpson Park Mountains and the Toiyabe Range. The vegetation is mainly Idaho fescue, bluebunch wheatgrass, and low sagebrush on the Walti and Zoesta soils and bluebunch wheatgrass, Idaho fescue, and mountain big sagebrush on the Softscrabble soils.

This unit makes up about 5 percent of the survey area.

The moderately deep Walti and similar soils are on

convex crests and shoulder slopes of high mountains. The upper layer of these soils is thick, very cobbly, and medium textured. Below this is fine textured material over hard bedrock.

The very deep Softscrabble and similar soils are on concave, north- and east-facing side slopes of high mountains. The upper layer of these soils is very thick, dark, very gravelly, and medium textured. The next layer is very gravelly or very cobbly and moderately fine textured. The lower layer is very gravelly or very cobbly and moderately coarse textured or medium textured.

The very deep Zoesta and similar soils are on south- and west-facing side slopes of high mountains. The upper layer of these soils is thin, cobbly, and medium textured. The lower layer is very thick and fine textured.

Of minor extent in this unit are Sumine and similar soils, Atlow and similar soils, Rock outcrop, Colbar and similar soils, and Welch and similar soils. Sumine and similar soils are moderately deep, very gravelly, and moderately fine textured. They are steep and are on south-facing side slopes of mountains. They support bluebunch wheatgrass and mountain big sagebrush. Atlow and similar soils are shallow, gravelly, and moderately fine textured. They are moderately sloping and are on the lower crests of mountains. They support bluegrass, bottlebrush squirreltail, and black sagebrush. Rock outcrop occurs on mountains as rimrock on eroded shoulder slopes, cliffs on side slopes, and scattered peaks. Areas of Rock outcrop are barren. Colbar and similar soils are moderately deep and moderately fine textured. They are moderately steep or steep and are on the lower side slopes of mountains. They support Thurber needlegrass, bluebunch wheatgrass, and Wyoming big sagebrush. Welch and similar soils are nearly level to gently sloping and are in intermountain drainageways and riparian areas. They support basin wildrye and basin big sagebrush in areas where the channel has been subject to entrenchment and bluegrass, hairgrass, rush, and sedges in undrained areas.

This unit is used for livestock grazing or wildlife habitat.

## 20. Packer-Hapgood-Sumine

*Moderately steep to very steep, moderately deep and very deep, well drained soils; on high mountains*

This map unit is in the Desatoya, New Pass, Shoshone, and Simpson Park Mountains and the Toiyabe Range. The vegetation is mainly Idaho fescue, Webber ricegrass, low sagebrush, and black sagebrush on the Packer soils; Idaho fescue, bluebunch wheatgrass, and snowberry on the Hapgood soils; and

bluebunch wheatgrass, basin wildrye, and mountain big sagebrush on the Sumine soils.

This unit makes up about 5 percent of the survey area.

The moderately steep to very steep, very deep Packer and similar soils are on convex crests and nose slopes of high mountains. The upper layer of these soils is very gravelly and medium textured. The lower layer is very gravelly and medium textured or moderately fine textured.

The steep or very steep, very deep Hapgood and similar soils are on concave, north-facing side slopes of high mountains. The upper layer of these soils is very thick, dark, very gravelly, and medium textured. The lower layer is very gravelly or very cobbly and medium textured.

The steep, moderately deep Sumine and similar soils are on south-facing side slopes of mountains. The upper layer of these soils is thick, dark, very gravelly, and medium textured. Below this is very gravelly, moderately fine textured material over hard bedrock.

Of minor extent in this unit are Layview and similar soils, Hatur and similar soils, Rock outcrop, and Welch and similar soils. Layview and similar soils are shallow and moderately fine textured. They are on convex crests of mountains. They support Idaho fescue, bluebunch wheatgrass, black sagebrush, and low sagebrush. Hatur and similar soils are moderately deep, very gravelly, and medium textured. They are on side slopes of mountains below limestone rock outcroppings. They support bluebunch wheatgrass, Idaho fescue, and mountain big sagebrush. Rock outcrop occurs as exposed bedrock on shoulder slopes and cliffs, along canyon walls, and on scattered peaks of mountains. Welch and similar soils are very deep, poorly drained, and moderately fine textured. They are along canyon bottoms and adjacent to seeps and springs. They are flooded for short periods late in spring. They support basin wildrye, bluegrass, and basin big sagebrush.

This unit is used mainly for livestock grazing or wildlife habitat.

## Broad Land Use Considerations

The soils in this survey area vary widely in their potential for major land uses, such as cropland, pasture, rangeland, wildlife habitat, and urbanization. Extensive changes in land use are not expected in the foreseeable future.

About 98 percent of the land area is used for range and related uses. Careful management of this land is needed. General soil map unit 3 has the highest potential to produce forage; however, because it is near



a water source and supports more palatable plants, it also has the potential to be overused, resulting in deterioration of the range. Map unit 2 and units 4 through 14 are used extensively for range. The main limitation is inadequate precipitation. Some of the soils in these units have a hardpan or bedrock, which limits the rooting depth and the available water capacity, and some have rock fragments on the surface, which hinder mechanical operations. Map units 15 through 20 are well suited to use as range; however, mechanical operations are hindered in most areas by the slope and by the rock fragments on the surface. The rooting depth is limited in some of the soils in units 15 through 19.

About 1 percent of the land in the survey area is used as irrigated cropland, and about 18 percent more would be suitable for use as cropland if irrigation water were available. The main crops are alfalfa hay, alfalfa for seed, improved grass-legume forage, and small grain, such as barley, wheat, and oats. Small areas in units 3 through 7 are used as cropland. The soils in unit 3 are limited by a high water table and a hazard of flooding. The soils in the other units are limited mainly because water is not available for irrigation.

Most of the irrigation water in the survey area must be pumped from wells, and sources of water are not easily found. The Duric Camborthids in unit 5, Typic Camborthids in units 5 through 7, and Durixerollic Camborthids in units 6 and 7 are well suited to climatically adapted plants. The selection of plants is limited by the short growing season. Most areas of the soils in these map units have potential for growing irrigated crops if the content of salts and sodium is controlled. Some of the sloping soils in units 6 and 7 are limited by a hazard of erosion or by low available soil moisture.

Less than 1 percent of the land in the survey area is used for pasture and meadow hay. Map unit 3 is used

extensively for pasture and meadow hay, and most areas of the unit are well suited to these uses. Some areas of this unit are limited by the content of salts and sodium.

Almost all of the land in the survey area is used by one or more kinds of wildlife. The perennial streams along the Reese River support catfish, black bass, and carp. Several of the streams and small ponds in the area support trout.

The openland wildlife species common to the area include deer, valley quail, cottontail, meadowlark, and killdeer. Map units 2 and 3 are used extensively by these species. The availability of water and the food and cover provided by the native meadows and pastures in these units are attractive to wildlife. Irrigated areas of units 4 through 7 also are used extensively by openland wildlife. Watering facilities need to be provided when these areas are not being irrigated. Fencerows, ditchbanks, and odd corners can be planted with suitable plants to improve the habitat. Adjacent areas of rangeland provide additional cover.

The wetland wildlife species common to the area include ducks, geese, herons, muskrat, and beaver. Map unit 3 is used extensively by these species. Shallow water areas can be established in the nearly level areas of this unit, but the more sloping areas are limited for this use. Some areas of this unit have been drained by stream entrenchment and thus provide limited habitat for wetland wildlife.

The rangeland wildlife species common to the area include antelope, mule deer, jackrabbit, chukar, and sage grouse. Map units 6 through 8 and 10 through 13 are used extensively by these species. The native plant community in many areas is limited by low precipitation. Proper design and placement of watering facilities are beneficial.

## Detailed Soil Map Units

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The map units on the detailed soil maps at the back of this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability and limitations of a soil for specific uses. They also can be used to plan the management needed for those uses.

A map unit delineation on a map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils and miscellaneous areas are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some included areas that belong to other taxonomic classes.

The presence of included areas in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into segments that have similar use and management requirements. The delineation of such landscape segments on the map provides sufficient information for the development of resource plans, but if intensive use of small areas is planned, onsite investigation is needed to precisely define and locate the soils and miscellaneous areas.

The detailed soil map units identified within the survey area reflect various relationships of soils with component parts of the landscape. These relationships are illustrated in figures 6 and 7. These figures indicate, in a three-dimensional representation, the soil-physiographic relationships typical of the area.

Figure 6 illustrates how some of the map unit delineations appear throughout the various segments of the landscape.

Each map unit has one or more major soils or miscellaneous areas and generally has several contrasting inclusions. Figure 7 illustrates the physiographic positions of the major components in a few typical map units.

The unique physiographic position of each soil or miscellaneous area identified is given in the map unit descriptions.

Soils that have profiles that are almost alike make up a *soil series*. The soils of a series have major horizons that are similar in composition, thickness, and arrangement. Soils of one series can differ in texture of the upper layer or of the underlying layers. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Kelk silt loam, saline, is a phase of the Kelk series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are called complexes or associations.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Beoska-Tenabo complex is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Akerue-Simpark-Punchbowl association is an example.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Playas is an example.

The detail of mapping was selected to meet the anticipated long-term use of the survey, and the map

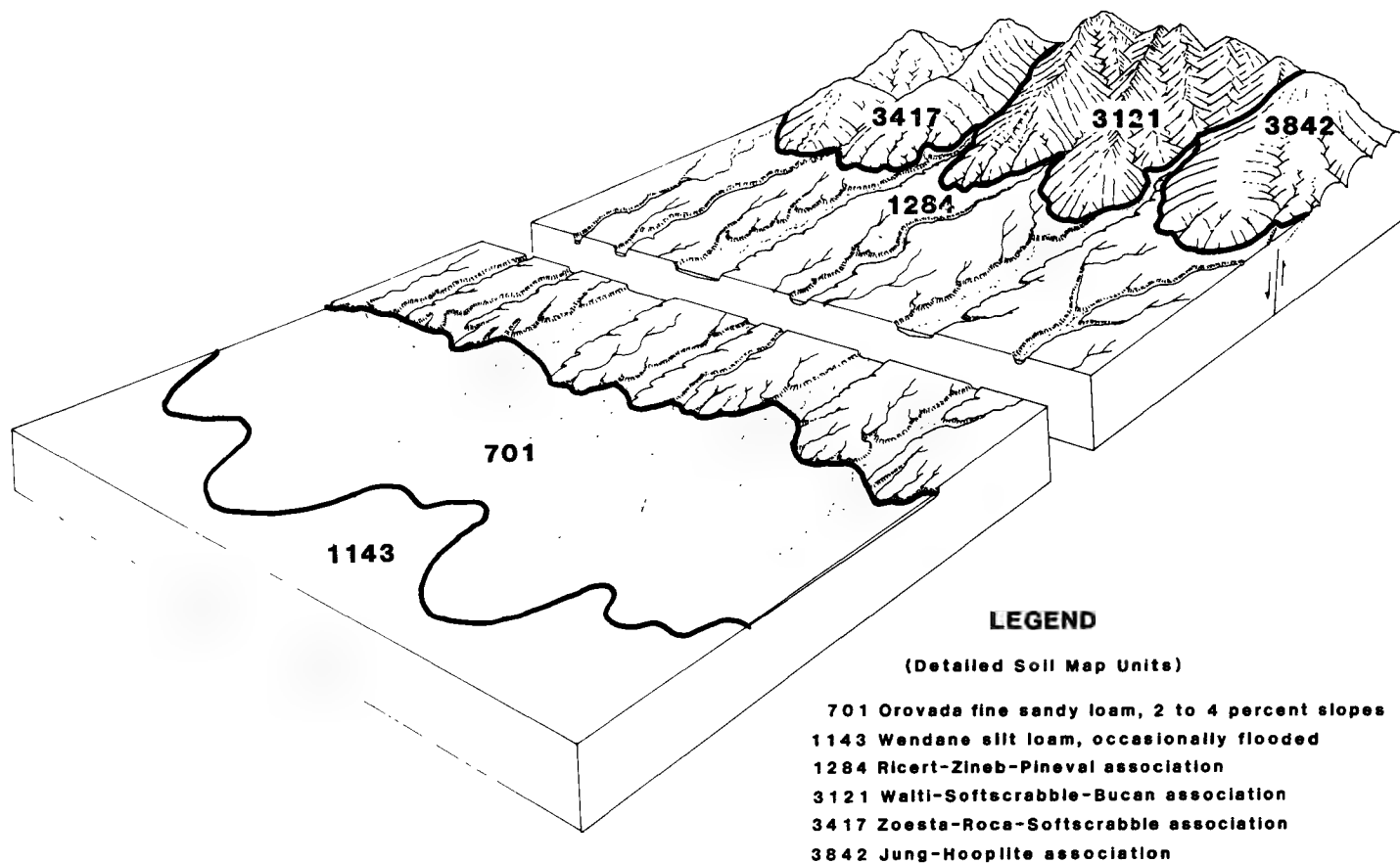


Figure 6.—Appearance of some detailed soil map units as they occur in various positions on the landscape.

units were designed to meet the needs for that use. Table 4 gives the acreage and proportionate extent of each map unit.

The following paragraphs explain some of the headings used in the map unit descriptions. Some of the terms used in the descriptions are defined in the Glossary. More information is given in the sections "Use and Management of the Soils" and "Soil Properties."

The landscape position is described for the entire map unit. These descriptions generally are broader than those given for each major component.

Composition includes the components identified in the name of the map unit as well as the contrasting inclusions. Inclusions are areas of soils or miscellaneous areas that differ from the soils or miscellaneous areas for which the unit is named. Inclusions can be either similar or contrasting. Similar inclusions are components that differ from the components for which the unit is named but that for purposes of use and management can be considered

comparable to the named components. In the "Composition" section, a single percentage is provided for a named soil and the similar inclusions because their use and management are similar. Contrasting inclusions are components that differ so significantly from the components for which the unit is named that they would have different use and management if they were extensive enough to be managed separately. For most uses, contrasting inclusions have a limited effect on use and management. Inclusions generally are in small areas, and they could not be mapped separately because of the scale used. Some small areas of strongly contrasting inclusions are identified by a special symbol on the detailed soil maps. A few inclusions may not have been observed and consequently are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the inclusions on the landscape.

A description of the characteristics of the soils in the map unit follows the description of the composition. The

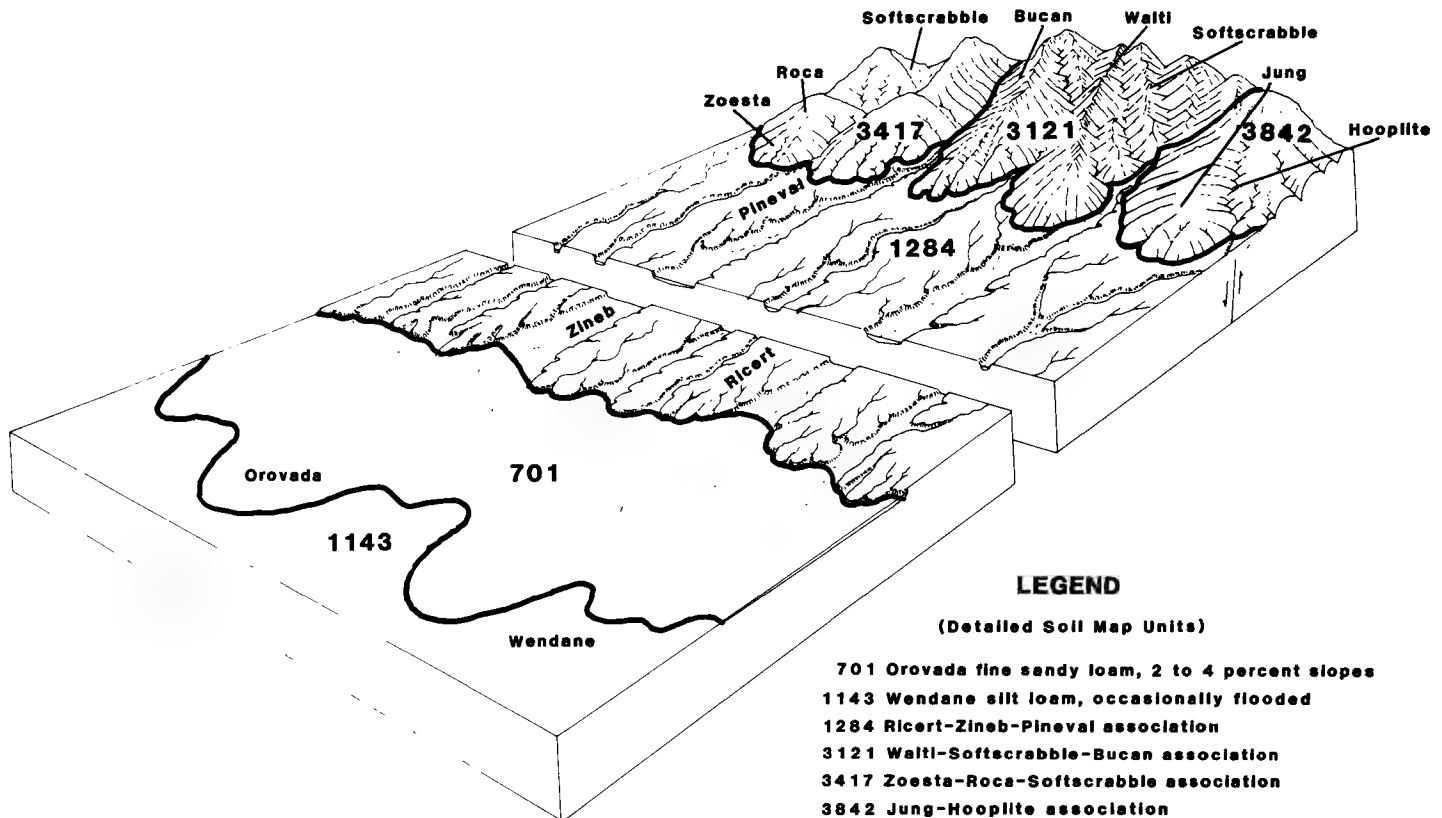


Figure 7.—Landscape positions of each major soil component identified within the respective map units.

major uses, ratings for various uses, restrictive features for various practices, and interpretive groups also are shown.

## Map Unit Descriptions

### 120—Akerue-Simpark-Robson association

*Positions on landscape:* Foothills

#### **Composition**

*Major components:*

- Akerue very stony loam, 15 to 30 percent slopes—40 percent
- Simpark very stony loam, 15 to 50 percent slopes—35 percent
- Robson very cobbly loam, 8 to 30 percent slopes—10 percent

*Contrasting inclusions:*

- Lithic Xeric Torriorthents, loamy, mixed, frigid, 15 to 75 percent slopes—5 percent
- Aridic Argixerolls, fine-loamy, mixed, frigid, 8 to 15 percent slopes—5 percent

- Rock outcrop—3 percent
- Rubble land—2 percent

#### **Characteristics of the Akerue Soil**

*Classification:* Xerollic Durargids, clayey-skeletal, montmorillonitic, frigid, shallow

*Positions on landscape:* Smooth to convex, south- and west-facing side slopes of foothills

*Parent material:* Residuum derived from andesite, rhyolite, and quartzite

*Slope:* 15 to 30 percent

*Elevation:* 6,200 to 7,000 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 90 days

*Dominant present vegetation:* Black sagebrush, needleandthread, Indian ricegrass

#### **Typical Profile**

*Rock fragments on surface:* 35 percent cobbles and stones, 35 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Very stony loam

*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 3 to 15 inches  
*Texture:* Very cobbly clay loam, very cobbly clay  
*Structure:* Angular blocky  
*Consistence:* Hard, firm  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 15 to 21 inches  
*Material:* Indurated hardpan  
*Structure:* Massive  
*Consistence:* Extremely hard, extremely firm  
*Depth:* 21 inches  
*Material:* Unweathered bedrock  
**Soil and Water Features**  
*Depth to the hardpan:* 14 to 20 inches  
*Depth to bedrock:* 15 to 26 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 1.6 to 2.0 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.15; T value—1; wind erodibility group—7  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Low

### **Characteristics of the Simpark Soil**

*Classification:* Xerollic Durargids, loamy-skeletal, mixed, frigid, shallow  
*Positions on landscape:* Smooth to slightly concave, east-facing and lower north-facing side slopes of foothills  
*Parent material:* Residuum that is derived from volcanic rock and includes volcanic ash  
*Slope:* 15 to 50 percent  
*Elevation:* 6,200 to 6,800 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 44 degrees F  
*Frost-free season:* About 80 days  
*Dominant present vegetation:* Black sagebrush, Indian ricegrass, bottlebrush squirreltail

### **Typical Profile**

*Rock fragments on surface:* 15 percent cobbles and stones, 35 percent pebbles

*Depth:* 0 to 13 inches  
*Texture:* Very stony loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 13 to 18 inches  
*Texture:* Very cobbly loam, very gravelly loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 18 to 22 inches  
*Material:* Indurated hardpan  
*Structure:* Massive  
*Consistence:* Extremely hard, extremely firm  
*Depth:* 22 inches  
*Material:* Unweathered bedrock  
**Soil and Water Features**  
*Depth to the hardpan:* 14 to 20 inches  
*Depth to bedrock:* 20 to 30 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 1.5 to 1.8 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—8  
*Hazard of erosion:* By water—moderate; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

### **Characteristics of the Robson Soil**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid  
*Positions on landscape:* Convex summits and higher north-facing side slopes of foothills  
*Parent material:* Residuum derived from siliceous tuff, rhyolite, and andesite  
*Slope:* 8 to 30 percent  
*Elevation:* 6,500 to 7,000 feet  
*Average annual precipitation:* About 12 inches  
*Average annual air temperature:* About 44 degrees F  
*Frost-free season:* About 90 days  
*Dominant present vegetation:* Low sagebrush, Sandberg bluegrass

### **Typical Profile**

*Depth:* 0 to 2 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 2 to 5 inches

*Texture:* Very cobbly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 5 to 15 inches

*Texture:* Very cobbly clay, extremely cobbly clay

*Structure:* Angular blocky

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 15 inches

*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 12 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 0.6 to 1.2 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.20; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Lithic Xeric Torriorthents, loamy, mixed, frigid

*Positions on landscape:* Convex nose slopes of foothills

*Distinctive present vegetation:* Black sagebrush, low sagebrush, bluegrass

##### **Inclusion 2**

*Classification:* Aridic Argixerolls, fine-loamy, mixed, frigid

*Positions on landscape:* Concave toe slopes of foothills

*Distinctive present vegetation:* Wyoming big sagebrush, mountain big sagebrush, Thurber needlegrass

##### **Inclusion 3**

*Positions on landscape:* Rimrock on shoulder slopes of foothills

*Distinctive present vegetation:* None

#### **Inclusion 4**

*Positions on landscape:* Rock stripes below Rock outcrop

*Distinctive present vegetation:* None

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Akerue Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

##### **Simpark Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

##### **Robson Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

##### **Akerue Soil**

*Range seeding:* Poor—droughty, large stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, cemented pan, too clayey

*Daily cover for landfill:* Poor—depth to rock, large stones, slope

*Shallow excavations:* Severe—depth to rock, cemented pan

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, cemented pan, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

##### **Simpark Soil**

*Range seeding:* Poor—droughty, large stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—cemented pan, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, cemented pan

*Local roads and streets:* Severe—cemented pan, slope

*Pond reservoir areas:* Severe—cemented pan, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

##### **Robson Soil**

*Range seeding:* Poor—droughty, large stones

*Roadfill:* Poor—depth to rock, large stones

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, large stones, slope

*Shallow excavations:* Severe—depth to rock, large stones, slope

*Local roads and streets:* Severe—depth to rock, large stones, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

### **Interpretive Groups**

*Land capability classification:* Akerue, Simpark, and Robson soils—VIIIs, nonirrigated

*Range site:* Akerue and Simpark soils—028B016N;

Robson soil—028B045N; Inclusion 1—028B038N;

Inclusion 2—028B007N; Inclusions 3 and 4—none

## **121—Akerue-Simpark-Punchbowl association**

*Positions on landscape:* Foothills

### **Composition**

*Major components:*

Akerue very cobbly loam, 15 to 30 percent slopes—40 percent

Simpark very cobbly loam, 15 to 30 percent slopes—25 percent

Punchbowl gravelly loam, 8 to 15 percent slopes—20 percent

*Contrasting inclusions:*

Robson very cobbly loam, 30 to 50 percent slopes—7 percent

Durixerollic Haplargids, loamy-skeletal, mixed, frigid, 2 to 8 percent slopes—5 percent

Rock outcrop—3 percent

### **Characteristics of the Akerue Soil**

*Classification:* Xerollic Durargids, clayey-skeletal, montmorillonitic, frigid, shallow

*Positions on landscape:* Convex to smooth, broad shoulder slopes and upper side slopes of foothills

*Parent material:* Residuum derived from andesite, rhyolite, and quartzite

*Slope:* 15 to 30 percent

*Elevation:* 6,600 to 7,000 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 90 days

*Dominant present vegetation:* Black sagebrush, needleandthread, Indian ricegrass

### **Typical Profile**

*Rock fragments on surface:* 35 percent cobbles, 35 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 3 to 15 inches

*Texture:* Very cobbly clay loam, very cobbly clay

*Structure:* Angular blocky

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 15 to 21 inches

*Material:* Indurated hardpan

*Structure:* Massive

*Consistence:* Extremely hard, extremely firm

*Depth:* 21 inches

*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches

*Depth to bedrock:* 15 to 26 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.6 to 2.0 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—1; wind erodibility group—7

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Simpark Soil**

*Classification:* Xerollic Durargids, loamy-skeletal, mixed, frigid, shallow

*Positions on landscape:* Smooth to slightly concave, lower side slopes of foothills

*Parent material:* Residuum that is derived from andesite and rhyolite and includes volcanic ash

*Slope:* 15 to 30 percent

*Elevation:* 6,200 to 6,800 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 90 days

*Dominant present vegetation:* Black sagebrush, Indian ricegrass, bottlebrush squirreltail

#### **Typical Profile**

*Rock fragments on surface:* 40 percent cobbles, 20 percent pebbles

*Depth:* 0 to 13 inches

*Texture:* Very cobbly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 13 to 18 inches

*Texture:* Very cobbly loam, very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 18 to 22 inches

*Material:* Indurated hardpan

*Structure:* Massive

*Consistence:* Extremely hard, extremely firm

*Depth:* 22 inches

*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches

*Depth to bedrock:* 20 to 30 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 1.5 to 1.8 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Punchbowl Soil**

*Classification:* Lithic Xerollic Haplargids, loamy, mixed, frigid

*Positions on landscape:* Convex narrow summits and shoulder slopes of foothills

*Parent material:* Residuum derived from andesite, dacite, and tuff

*Slope:* 8 to 15 percent

*Elevation:* 6,800 to 7,200 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 90 days

*Dominant present vegetation:* Black sagebrush, bluegrass, bottlebrush squirreltail

#### **Typical Profile**

*Depth:* 0 to 3 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 3 to 7 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 7 to 11 inches

*Texture:* Gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 11 inches

*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 8 to 14 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.3 to 1.7 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* Slightly concave, north-facing side slopes of foothills

*Distinctive present vegetation:* Low sagebrush, bluegrass

##### **Inclusion 2**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, frigid



*Positions on landscape:* Drainageways and inset fans between foothills

*Distinctive present vegetation:* Wyoming big sagebrush, bottlebrush squirreltail

### **Inclusion 3**

*Positions on landscape:* Rimrock on shoulder slopes of foothills

*Distinctive present vegetation:* None

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Akerue Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Simpark Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Punchbowl Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

### **Suitability and Limitations for Selected Uses**

#### **Akerue Soil**

*Range seeding:* Poor—droughty, large stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, cemented pan, too clayey

*Daily cover for landfill:* Poor—depth to rock, large stones, slope

*Shallow excavations:* Severe—depth to rock, cemented pan

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, cemented pan, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

#### **Simpark Soil**

*Range seeding:* Poor—droughty, large stones

*Roadfill:* Poor—depth to rock, large stones

*Topsoil:* Poor—cemented pan, slope, small stones

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, cemented pan, large stones

*Local roads and streets:* Severe—cemented pan, slope, large stones

*Pond reservoir areas:* Severe—cemented pan, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Punchbowl Soil**

*Range seeding:* Poor—droughty, depth to rock

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones

*Daily cover for landfill:* Poor—depth to rock, small stones

*Shallow excavations:* Severe—depth to rock

*Local roads and streets:* Severe—depth to rock

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Akerue, Simpark, and Punchbowl soils—VIIIs, nonirrigated

*Range site:* Akerue, Simpark, and Punchbowl soils—028B016N; Inclusion 1—028B045N; Inclusion 2—028B010N; Inclusion 3—none

## **141—Unsel-Wardenot-Belted association**

*Positions on landscape:* Piedmont slopes

### **Composition**

*Major components:*

Unsel gravelly fine sandy loam, 2 to 4 percent slopes—35 percent

Wardenot gravelly fine sandy loam, 2 to 4 percent slopes—30 percent

Belted gravelly fine sandy loam, 2 to 8 percent slopes—25 percent

*Contrasting inclusions:*

Haploxerollic Durargids, loamy, mixed, mesic, shallow, 2 to 4 percent slopes—7 percent

Durixerollic Haplargids, fine-loamy, mixed, mesic, 2 to 4 percent slopes—3 percent

### **Characteristics of the Unsel Soil**

*Classification:* Duric Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* The lower fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 5,700 to 5,900 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 51 degrees F

*Frost-free season:* About 130 days

*Dominant present vegetation:* Shadscale, Bailey greasewood, bottlebrush squirreltail, galleta

### **Typical Profile**

*Rock fragments on surface:* 80 percent pebbles

*Depth:* 0 to 8 inches  
*Texture:* Gravelly fine sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 5 to 13

*Depth:* 8 to 18 inches  
*Texture:* Gravelly clay loam  
*Structure:* Subangular blocky  
*Consistence:* Hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 5 to 13

*Depth:* 18 to 31 inches  
*Texture:* Gravelly sandy clay loam  
*Structure:* Subangular blocky  
*Consistence:* Hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 13 to 25

*Depth:* 31 to 60 inches  
*Texture:* Very gravelly loamy sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Strongly alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 13 to 25

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 3.6 to 5.8 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Medium or rapid  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.20; T value—2; wind erodibility group—4  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Characteristics of the Wardenot Soil**

*Classification:* Typic Torriorthents, sandy-skeletal, mixed, mesic  
*Positions on landscape:* Fan skirts, inset fans  
*Parent material:* Mixed alluvium  
*Slope:* 2 to 4 percent  
*Elevation:* 5,600 to 5,800 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 51 degrees F

*Frost-free season:* About 130 days  
*Dominant present vegetation:* Shadscale, greasewood, bottlebrush squirreltail, galleta

#### **Typical Profile**

*Depth:* 0 to 5 inches  
*Texture:* Gravelly fine sandy loam  
*Structure:* Massive  
*Consistence:* Soft, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 2 to 13

*Depth:* 5 to 60 inches  
*Texture:* Stratified very gravelly fine sandy loam to extremely cobbly loamy sand

*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 2 to 13

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* Rare  
*Permeability:* Moderately rapid  
*Available water capacity:* 2.7 to 5.0 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Medium  
*Hydrologic group:* A  
*Erosion factors (upper layer):* K value—0.10; T value—5; wind erodibility group—4  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Characteristics of the Belted Soil**

*Classification:* Haplic Durargids, loamy, mixed, mesic, shallow  
*Positions on landscape:* The higher fan piedmont remnants  
*Parent material:* Mixed alluvium  
*Slope:* 2 to 4 percent  
*Elevation:* 5,700 to 5,900 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 53 degrees F  
*Frost-free season:* About 130 days  
*Dominant present vegetation:* Shadscale, Bailey greasewood, Indian ricegrass, galleta

#### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles  
*Depth:* 0 to 4 inches  
*Texture:* Gravelly fine sandy loam

*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 13

*Depth:* 4 to 14 inches  
*Texture:* Gravelly clay loam  
*Structure:* Granular

*Consistence:* Hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 5 to 13

*Depth:* 14 to 25 inches  
*Material:* Cemented hardpan  
*Structure:* Massive  
*Consistence:* Very hard, very firm

*Depth:* 25 to 60 inches  
*Texture:* Very gravelly sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Very strongly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 13

#### **Soil and Water Features**

*Depth to the hardpan:* 6 to 14 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 1.4 to 2.2 inches  
*Water-supplying capacity:* 5 inches  
*Runoff:* Slow  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—4  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Haploxerollic Durargids, loamy, mixed, mesic, shallow  
*Positions on landscape:* Fan drainageways of the higher fan piedmont remnants  
*Distinctive present vegetation:* Black sagebrush, Indian ricegrass, shadscale

##### **Inclusion 2**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* Fan drainageways of the lower fan piedmont remnants  
*Distinctive present vegetation:* Wyoming big sagebrush, Indian ricegrass, needleandthread

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Unsel Soil**

*Wild herbaceous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Poor

##### **Wardenot Soil**

*Wild herbaceous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Poor

##### **Belted Soil**

*Wild herbaceous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Poor

#### **Suitability and Limitations for Selected Uses**

##### **Unsel Soil**

*Range seeding:* Poor—too arid  
*Roadfill:* Good  
*Topsoil:* Poor—small stones, area reclaim  
*Daily cover for landfill:* Poor—seepage, too sandy, small stones  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Slight  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—seepage  
*Sand:* Probable source  
*Gravel:* Probable source

##### **Wardenot Soil**

*Range seeding:* Poor—too arid, droughty  
*Roadfill:* Fair—large stones  
*Topsoil:* Poor—small stones, area reclaim  
*Daily cover for landfill:* Poor—seepage, small stones  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Moderate—flooding, large stones  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—seepage  
*Sand:* Probable source  
*Gravel:* Probable source

##### **Belted Soil**

*Range seeding:* Poor—too arid, droughty, cemented pan  
*Roadfill:* Good  
*Topsoil:* Poor—cemented pan, small stones, area reclaim  
*Daily cover for landfill:* Poor—cemented pan, seepage, too sandy  
*Shallow excavations:* Severe—cemented pan, cutbanks cave

*Local roads and streets:* Moderate—cemented pan  
*Pond reservoir areas:* Severe—seepage, cemented pan  
*Embankments, dikes, and levees:* Severe—seepage  
*Sand:* Probable source  
*Gravel:* Probable source

### **Interpretive Groups**

*Land capability classification:* Unsel soil—Illc, irrigated, and Vllc, nonirrigated; Wardenot soil—Ive, irrigated, and Vllc, nonirrigated; Belted soil—Vlls, nonirrigated

*Range site:* Unsel, Wardenot, and Belted soils—029X017N; Inclusion 1—028B016N; Inclusion 2—028B010N

## **142—Unsel-Caphor-Chedehap association**

*Positions on landscape:* Piedmont slopes

### **Composition**

*Major components:*

Unsel gravelly fine sandy loam, 2 to 4 percent slopes—40 percent

Caphor fine sandy loam, 2 to 4 percent slopes—25 percent

Chedehap coarse sandy loam, 2 to 8 percent slopes—20 percent

*Contrasting inclusions:*

Batan silt loam, 0 to 2 percent slopes—7 percent

Creemon silt loam, 0 to 2 percent slopes—4 percent

Xeric Torriorthents, loamy-skeletal, mixed, mesic, 0 to 2 percent slopes—4 percent

### **Characteristics of the Unsel Soil**

*Classification:* Duric Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* Fan piedmont remnants, nonburied fan remnants

*Parent material:* Mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 5,700 to 5,900 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 51 degrees F

*Frost-free season:* About 130 days

*Dominant present vegetation:* Shadscale, Bailey greasewood, bottlebrush squirreltail, galleta

### **Typical Profile**

*Rock fragments on surface:* 80 percent pebbles

*Depth:* 0 to 8 inches

*Texture:* Gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

*Depth:* 8 to 18 inches

*Texture:* Gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

*Depth:* 18 to 31 inches

*Texture:* Gravelly sandy clay loam

*Structure:* Subangular blocky

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

*Depth:* 31 to 60 inches

*Texture:* Very gravelly loamy sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 3.6 to 5.8 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.20; T value—2; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Caphor Soil**

*Classification:* Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic

*Positions on landscape:* Fan skirts

*Parent material:* Mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 5,700 to 5,800 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Shadscale, Indian ricegrass, bottlebrush squirreltail

**Typical Profile**

*Depth:* 0 to 7 inches  
*Texture:* Fine sandy loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
  
*Depth:* 7 to 17 inches  
*Texture:* Sandy loam  
*Structure:* Massive  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
  
*Depth:* 17 to 35 inches  
*Texture:* Sandy loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 2 to 10  
  
*Depth:* 35 to 60 inches  
*Texture:* Gravelly coarse sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 4 millimhos per centimeter

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow over very rapid  
*Available water capacity:* 3.7 to 5.5 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

**Characteristics of the Chedehap Soil**

*Classification:* Xerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Fan aprons  
*Parent material:* Moderately coarse textured alluvium  
*Slope:* 2 to 8 percent  
*Elevation:* 5,700 to 5,800 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 51 degrees F  
*Frost-free season:* About 120 days

*Dominant present vegetation:* Wyoming big sagebrush, spiny hopsage, needleandthread, bluegrass

**Typical Profile**

*Rock fragments on surface:* 30 percent pebbles  
  
*Depth:* 0 to 5 inches  
*Texture:* Coarse sandy loam  
*Structure:* Subangular blocky  
*Consistence:* Soft, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
  
*Depth:* 5 to 12 inches  
*Texture:* Sandy loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
  
*Depth:* 12 to 37 inches  
*Texture:* Sandy loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
  
*Depth:* 37 to 60 inches  
*Texture:* Loamy coarse sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* Rare  
*Permeability:* Moderately rapid over very rapid  
*Available water capacity:* 4.1 to 6.0 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.17; T value—3; wind erodibility group—4  
*Hazard of erosion:* By water—slight; by wind—moderate  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

**Contrasting Inclusions****Inclusion 1**

*Classification:* Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic  
*Positions on landscape:* Alluvial flat remnants adjacent to the lower fan skirt margins

*Distinctive present vegetation:* Black sagebrush, shadscale

#### **Inclusion 2**

*Classification:* Duric Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* The lower fan skirt margins

*Distinctive present vegetation:* Shadscale, bud sagebrush

#### **Inclusion 3**

*Classification:* Xeric Torriorthents, loamy-skeletal, mixed, mesic

*Positions on landscape:* Fan drainageways, inset fans

*Distinctive present vegetation:* Indian ricegrass

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Unsel Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

#### **Caphor Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

#### **Chedehap Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Unsel Soil**

*Range seeding:* Poor—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

#### **Caphor Soil**

*Range seeding:* Poor—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

#### **Chedehap Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Fair—small stones, thin layer

*Daily cover for landfill:* Poor—too sandy

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—flooding, frost action

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage, piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Unsel and Caphor soils—IIIe, irrigated, and VIIc, nonirrigated; Chedehap soil—IVe, irrigated, and VIIs, nonirrigated

*Range site:* Unsel soil—029X017N; Caphor soil—028B017N; Chedehap soil—028B052N; Inclusion 1—024X003N; Inclusion 2—024X002N; Inclusion 3—028B010N

## **150—Chedehap-Enko-Ricert association**

*Positions on landscape:* Piedmont slopes

### **Composition**

*Major components:*

Chedehap coarse sandy loam, 2 to 8 percent slopes—45 percent

Enko gravelly fine sandy loam, 2 to 8 percent slopes—25 percent

Ricert gravelly fine sandy loam, 2 to 4 percent slopes—15 percent

*Contrasting inclusions:*

Durixerollic Camborthids, coarse-loamy, mixed, mesic, 4 to 8 percent slopes—6 percent

Durixerollic Haplargids, fine-loamy, mixed, mesic, 2 to 4 percent slopes—5 percent

Xeric Torriorthents, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—4 percent

### **Characteristics of the Chedehap Soil**

*Classification:* Xerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Inset fans, fan aprons

*Parent material:* Moderately coarse textured alluvium

*Slope:* 2 to 8 percent

*Elevation:* 5,800 to 6,200 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 51 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Wyoming big sagebrush, spiny hopsage, needleandthread, bluegrass

**Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Coarse sandy loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 5 to 12 inches

*Texture:* Sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 12 to 37 inches

*Texture:* Sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 37 to 60 inches

*Texture:* Loamy coarse sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Strongly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Rare

*Permeability:* Moderately rapid over very rapid

*Available water capacity:* 4.1 to 6.0 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.17; T value—3; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—moderate

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

**Characteristics of the Enko Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Fan apron remnants

*Parent material:* Mixed alluvium that includes some loess and volcanic ash

*Slope:* 2 to 8 percent

*Elevation:* 5,900 to 6,200 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, Indian ricegrass, bottlebrush squirreltail

**Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Gravelly fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 6 to 12 inches

*Texture:* Loam, sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 12 to 18 inches

*Texture:* Fine sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 18 to 60 inches

*Texture:* Sandy loam, fine sandy loam

*Structure:* Massive

*Consistence:* Hard, firm

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 6.1 to 8.2 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.10; T value—5; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

**Characteristics of the Ricert Soil**

*Classification:* Duric Natrargids, fine-loamy, mixed, mesic

*Positions on landscape:* Fan piedmont remnants

*Parent material:* Thin loess deposits over mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 5,800 to 6,100 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bluegrass

### **Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 6 to 18 inches

*Texture:* Loam, clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Strongly alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

*Depth:* 18 to 60 inches

*Texture:* Very gravelly sandy loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 4 to 6 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.20; T value—5; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* The upper part of fan apron remnants

*Distinctive present vegetation:* Spiny hopsage, Wyoming big sagebrush, needleandthread

#### **Inclusion 2**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* The upper part of fan piedmont remnants

*Distinctive present vegetation:* Wyoming big sagebrush, Indian ricegrass

#### **Inclusion 3**

*Classification:* Xeric Torriorthents, loamy-skeletal, mixed, mesic

*Positions on landscape:* Fan drainageways

*Distinctive present vegetation:* Black sagebrush, needleandthread

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Chedehap Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Enko Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Ricert Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

### **Suitability and Limitations for Selected Uses**

#### **Chedehap Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Fair—small stones, thin layer

*Daily cover for landfill:* Poor—too sandy

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—flooding, frost action

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage, piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Enko Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Fair—small stones

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Ricert Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium

*Roadfill:* Good



*Topsoil:* Poor—small stones, area reclaim, excess sodium  
*Daily cover for landfill:* Poor—seepage, small stones  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Slight  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—seepage, excess sodium  
*Sand:* Probable source  
*Gravel:* Probable source

### **Interpretive Groups**

*Land capability classification:* Chedehap and Ricert soils—IVe, irrigated, and VIIs, nonirrigated; Enko soil—IVe, irrigated, and VIIs, nonirrigated  
*Range site:* Chedehap soil—028B052N; Enko soil—028B010N; Ricert soil—028B017N; Inclusion 1—028B052N; Inclusion 2—028B010N; Inclusion 3—028B016N

## **160—Batan association**

*Positions on landscape:* Alluvial flat remnants

### **Composition**

*Major components:*

Batan silt loam, 0 to 2 percent slopes—50 percent  
 Batan silt loam, slightly saline, 0 to 2 percent slopes—40 percent

*Contrasting inclusions:*

Wholan silt loam, 0 to 2 percent slopes—8 percent  
 Rasille silt loam, 0 to 2 percent slopes—2 percent

### **Characteristics of the Batan Soil**

*Classification:* Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Broad, slightly dissected alluvial flat remnants

*Parent material:* Silty alluvium that is high in content of loess and pyroclastic material

*Slope:* 0 to 2 percent

*Elevation:* 5,600 to 6,100 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Shadscale, black greasewood, bottlebrush squirreltail

### **Typical Profile**

*Depth:* 0 to 5 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 20 to 40 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

*Depth:* 5 to 68 inches

*Texture:* Stratified silt loam to silty clay loam

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 11 to 12 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—4L

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

### **Characteristics of the Batan Soil, Slightly Saline**

*Classification:* Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* The upper dissected alluvial flat remnants

*Parent material:* Silty alluvium that is high in content of loess and pyroclastic material

*Slope:* 0 to 2 percent

*Elevation:* 5,600 to 6,100 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

### **Typical Profile**

*Depth:* 0 to 5 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

*Depth:* 5 to 68 inches

*Texture:* Stratified silt loam to silty clay loam

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 11 to 12 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—4L

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—moderate

*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Typic Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Inset fans dissecting alluvial flat remnants

*Distinctive present vegetation:* Winterfat, bud sagebrush, Indian ricegrass

#### **Inclusion 2**

*Classification:* Durixerollic Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Narrow drainageways

*Distinctive present vegetation:* Wyoming big sagebrush, spiny hopsage, Indian ricegrass

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Batan Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Batan Soil, Slightly Saline**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

### **Suitability and Limitations for Selected Uses**

#### **Batan Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium

*Roadfill:* Poor—low strength

*Topsoil:* Poor—excess sodium

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Severe—low strength

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Batan Soil, Slightly Saline**

*Range seeding:* Poor—too arid, excess salt, excess sodium

*Roadfill:* Poor—low strength

*Topsoil:* Poor—excess salt, excess sodium

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Severe—low strength

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Slight—excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Restrictive Features for Selected Practices**

#### **Batan Soil**

*Drainage:* Deep to water

*Irrigation:* Excess salt, excess sodium

*Terraces and diversions:* Erodes easily

#### **Batan Soil, Slightly Saline**

*Drainage:* Deep to water

*Irrigation:* Excess salt, excess sodium

*Terraces and diversions:* Erodes easily

### **Interpretive Groups**

*Land capability classification:* Batan soil—VIIc, nonirrigated; Batan soil, slightly saline—VIIc, nonirrigated

*Range site:* Batan soil—024X003N; Batan soil, slightly saline—024X002N; Inclusion 1—024X004N; Inclusion 2—028B010N

## **161—Batan silt loam**

*Positions on landscape:* Alluvial flat remnants

### **Composition**

*Major component:*

Batan silt loam, 0 to 2 percent slopes—85 percent

*Contrasting inclusions:*

Bubus very fine sandy loam, 0 to 2 percent slopes—5 percent

Typic Torriorthents, fine-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—5 percent

Sonoma silt loam, rarely flooded, strongly saline, 0 to 2 percent slopes—5 percent

### **Characteristics of the Batan Soil**

*Classification:* Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Alluvial flat remnants  
*Parent material:* Silty alluvium that is high in content of loess and pyroclastic material  
*Slope:* 0 to 2 percent  
*Elevation:* 5,200 to 6,100 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Shadscale, black greasewood, bottlebrush squirreltail

#### **Typical Profile**

*Depth:* 0 to 5 inches  
*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 20 to 40 millimhos per centimeter  
*Sodicity (SAR):* 46 to 60  
*Depth:* 5 to 68 inches  
*Texture:* Stratified silt loam to silty clay loam  
*Structure:* Massive  
*Consistence:* Hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 11 to 12 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—4L  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—severe  
*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic  
*Positions on landscape:* The highest part of alluvial flat remnants  
*Distinctive present vegetation:* Black greasewood, shadscale, bud sagebrush

##### **Inclusion 2**

*Classification:* Typic Torriorthents, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Recent alluvial flats  
*Distinctive present vegetation:* Black greasewood, shadscale, bud sagebrush

##### **Inclusion 3**

*Classification:* Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic  
*Positions on landscape:* Smooth axial-stream flood plains  
*Distinctive present vegetation:* Basin wildrye, black greasewood

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor

#### **Suitability and Limitations for Selected Uses**

*Range seeding:* Poor—too arid, excess salt, excess sodium  
*Roadfill:* Poor—low strength  
*Topsoil:* Poor—excess salt, excess sodium  
*Daily cover for landfill:* Good  
*Shallow excavations:* Slight  
*Local roads and streets:* Severe—low strength  
*Pond reservoir areas:* Slight  
*Embankments, dikes, and levees:* Severe—excess salt, excess sodium  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Restrictive Features for Selected Practices**

*Drainage:* Deep to water  
*Irrigation:* Excess salt, excess sodium  
*Terraces and diversions:* Erodes easily

#### **Interpretive Groups**

*Land capability classification:* Batan soil—VIIIs, nonirrigated  
*Range site:* Batan soil—024X003N; Inclusion 1—024X003N; Inclusion 2—024X012N; Inclusion 3—024X007N

### **162—Batan-Kelk association**

*Positions on landscape:* Alluvial flats, fan skirts

#### **Composition**

*Major components:*  
 Batan silt loam, 0 to 2 percent slopes—40 percent  
 Kelk silt loam, 0 to 2 percent slopes—35 percent  
 Kelk silt loam, occasionally flooded, 0 to 2 percent slopes—15 percent

*Contrasting inclusions:*

Wendane silt loam, occasionally flooded, 0 to 2 percent slopes—8 percent

Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 0 to 2 percent slopes—2 percent

**Characteristics of the Batan Soil**

*Classification:* Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Alluvial flat remnants

*Parent material:* Silty alluvium that is high in content of loess and pyroclastic material

*Slope:* 0 to 2 percent

*Elevation:* 5,600 to 5,800 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Shadscale, black greasewood, bottlebrush squirreltail

**Typical Profile**

*Depth:* 0 to 5 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 20 to 40 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

*Depth:* 5 to 68 inches

*Texture:* Stratified silt loam to silty clay loam

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 25 to 50

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 11 to 12 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—4L

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

**Characteristics of the Kelk Soil**

*Classification:* Durixerollic Camborthids, fine-silty, mixed, mesic

*Positions on landscape:* Inset fans dissecting alluvial flats

*Parent material:* Loess that includes volcanic ash, mixed alluvium

*Slope:* 0 to 2 percent

*Elevation:* 5,600 to 5,800 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Black greasewood, basin big sagebrush, basin wildrye

**Typical Profile**

*Depth:* 0 to 3 inches

*Texture:* Silt loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Depth:* 3 to 20 inches

*Texture:* Silt loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 4 to 16 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

*Depth:* 20 to 40 inches

*Texture:* Silt loam

*Structure:* Massive

*Consistence:* Hard, firm

*Reaction:* Strongly alkaline

*Salinity:* 4 to 16 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

*Depth:* 40 to 60 inches

*Texture:* Silt loam

*Structure:* Massive

*Consistence:* Hard, firm

*Reaction:* Strongly alkaline

*Salinity:* 4 to 16 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 10 to 12 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—moderate  
*Potential for frost action:* Moderate

### **Characteristics of the Kelk Soil, Occasionally Flooded**

*Classification:* Durixerollic Camborthids, fine-silty, mixed, mesic

*Positions on landscape:* Inset fans

*Parent material:* Loess that includes volcanic ash, mixed alluvium

*Slope:* 0 to 2 percent

*Elevation:* 5,600 to 5,800 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Basin wildrye, basin big sagebrush, rubber rabbitbrush, black greasewood

### **Typical Profile**

*Depth:* 0 to 14 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 14 to 51 inches

*Texture:* Silt loam

*Structure:* Massive

*Consistence:* Hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

*Depth:* 51 to 60 inches

*Texture:* Silt loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Occasional for brief to long periods in February through June

*Permeability:* Slow

*Available water capacity:* 11 to 12 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Aeric Halaquepts, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* The lower areas of alluvial flats

*Distinctive present vegetation:* Black greasewood, basin wildrye, inland saltgrass

#### **Inclusion 2**

*Classification:* Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic

*Positions on landscape:* Fan skirts over the higher areas of alluvial flat remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Batan Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Kelk Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Kelk Soil, Occasionally Flooded**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

### **Suitability and Limitations for Selected Uses**

#### **Batan Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium

*Roadfill:* Poor—low strength

*Topsoil:* Poor—excess salt, excess sodium

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Severe—low strength

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Kelk Soil**

*Range seeding:* Poor—excess salt

*Roadfill:* Fair—low strength, shrink-swell

*Topsoil:* Poor—thin layer, excess sodium

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—low strength, frost action, shrink-swell

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—piping, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Kelk Soil, Occasionally Flooded**

*Range seeding:* Fair—too arid

*Roadfill:* Poor—low strength

*Topsoil:* Good

*Daily cover for landfill:* Good

*Shallow excavations:* Moderate—flooding

*Local roads and streets:* Severe—low strength, flooding

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Restrictive Features for Selected Practices**

##### **Batan Soil**

*Drainage:* Deep to water

*Irrigation:* Excess salt, excess sodium

*Terraces and diversions:* Erodes easily

#### **Interpretive Groups**

*Land capability classification:* Batan soil—VIIIs, nonirrigated; Kelk soil—IIs, irrigated, and VIs, nonirrigated; Kelk soil, occasionally flooded—IIfw, irrigated, and VIW, nonirrigated

*Range site:* Batan soil—024X003N; Kelk soil—024X022N; Kelk soil, occasionally flooded—024X006N; Inclusion 1—024X011N; Inclusion 2—028B017N

### **168—Batan-Bubus-Ocala association**

*Positions on landscape:* Alluvial flats, fan skirts

#### **Composition**

*Major components:*

Batan silt loam, 0 to 2 percent slopes—35 percent

Bubus very fine sandy loam, 0 to 2 percent slopes—35 percent

Ocala silt loam, occasionally flooded, 0 to 2 percent slopes—20 percent

*Contrasting inclusions:*

Kelk silt loam, occasionally flooded, 0 to 2 percent slopes—5 percent

Broyles very fine sandy loam, 0 to 2 percent slopes—5 percent

#### **Characteristics of the Batan Soil**

*Classification:* Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* The lower alluvial flat remnants

*Parent material:* Silty alluvium that is high in content of loess and pyroclastic material

*Slope:* 0 to 2 percent

*Elevation:* 5,300 to 6,000 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Shadscale, black sagebrush, bottlebrush squirreltail

#### **Typical Profile**

*Depth:* 0 to 5 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 20 to 40 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

*Depth:* 5 to 68 inches

*Texture:* Stratified silt loam to silty clay loam

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 25 to 50

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 11 to 12 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—4L

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

#### **Characteristics of the Bubus Soil**

*Classification:* Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic

*Positions on landscape:* The higher, slightly dissected alluvial flat remnants

*Parent material:* Mixed alluvium that is high in content of pyroclastic material

*Slope:* 0 to 2 percent

*Elevation:* 5,300 to 6,000 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Shadscale, black greasewood, bottlebrush squirreltail

#### **Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Very fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

*Depth:* 6 to 60 inches

*Texture:* Stratified sandy loam to silt loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 9 to 10 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.49; T value—5; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

#### **Characteristics of the Ocala Soil**

*Classification:* Aerlic Halaquepts, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Low, smooth alluvial flats

*Parent material:* Mixed silty alluvium that includes volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 5,300 to 6,000 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Black greasewood, rubber rabbitbrush, basin wildrye, alkali sacaton

#### **Typical Profile**

*Depth:* 0 to 4 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Very strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 30 to 46

*Depth:* 4 to 36 inches

*Texture:* Silt loam, silty clay loam

*Structure:* Massive

*Consistence:* Hard, brittle

*Reaction:* Strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 20 to 35

*Depth:* 36 to 60 inches

*Texture:* Silt loam, silty clay loam

*Structure:* Massive

*Consistence:* Very hard, very firm

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 20 to 35

#### **Soil and Water Features**

*Depth to a seasonal high water table:* 42 to 60 inches

*Frequency of flooding:* Occasional for brief to long periods in February through May

*Permeability:* Slow

*Available water capacity:* 10 to 12 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Very slow

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—4L

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* High

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Durixerollic Camborthids, fine-silty, mixed, mesic

*Positions on landscape:* Fan skirts

*Distinctive present vegetation:* Basin big sagebrush, black greasewood, basin wildrye

##### **Inclusion 2**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Fan skirts

*Distinctive present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Batan Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

**Bubus Soil***Wild herbaceous plants (nonirrigated):* Very poor*Shrubs (nonirrigated):* Very poor**Ocala Soil***Wild herbaceous plants (nonirrigated):* Very poor*Shrubs (nonirrigated):* Very poor**Suitability and Limitations for Selected Uses****Batan Soil***Range seeding:* Poor—too arid, excess salt, excess sodium*Roadfill:* Poor—low strength*Topsoil:* Poor—excess salt, excess sodium*Daily cover for landfill:* Good*Shallow excavations:* Slight*Local roads and streets:* Severe—low strength*Pond reservoir areas:* Slight*Embankments, dikes, and levees:* Severe—excess salt, excess sodium*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines**Bubus Soil***Range seeding:* Poor—too arid, excess salt, excess sodium*Roadfill:* Good*Topsoil:* Poor—excess salt*Daily cover for landfill:* Good*Shallow excavations:* Slight*Local roads and streets:* Slight*Pond reservoir areas:* Moderate—seepage*Embankments, dikes, and levees:* Severe—piping, excess salt*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines**Ocala Soil***Range seeding:* Poor—excess salt, excess sodium*Roadfill:* Poor—low strength*Topsoil:* Poor—excess salt, excess sodium*Daily cover for landfill:* Poor—excess salt, excess sodium*Shallow excavations:* Moderate—wetness, flooding*Local roads and streets:* Severe—low strength, flooding, frost action*Pond reservoir areas:* Slight*Embankments, dikes, and levees:* Severe—excess salt, excess sodium*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines**Restrictive Features for Selected Practices****Batan Soil***Drainage:* Deep to water*Irrigation:* Excess salt, excess sodium*Terraces and diversions:* Erodes easily**Interpretive Groups***Land capability classification:* Batan and Bubus soils—VIIIs, nonirrigated; Ocala soil—VIIw, nonirrigated*Range site:* Batan and Bubus soils—024X003N; Ocala soil—024X007N; Inclusion 1—024X006N; Inclusion 2—024X002N**169—Batan-Ocala association***Positions on landscape:* Basin floors**Composition***Major components:*

Batan silt loam, 0 to 2 percent slopes—35 percent

Ocala silty clay loam, occasionally flooded, 0 to 2 percent slopes—25 percent

Ocala silty clay loam, rarely flooded, 0 to 2 percent slopes—25 percent

*Contrasting inclusions:*

Aquic Durorthidic Torriorthents, fine-silty, mixed, mesic, 0 to 2 percent slopes—5 percent

Playas—5 percent

Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic, 8 to 15 percent slopes—5 percent

**Characteristics of the Batan Soil***Classification:* Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic*Positions on landscape:* Alluvial flat remnants*Parent material:* Silty alluvium that is high in content of loess and pyroclastic material*Slope:* 0 to 2 percent*Elevation:* 5,500 to 6,100 feet*Average annual precipitation:* About 7 inches*Average annual air temperature:* About 49 degrees F*Frost-free season:* About 120 days*Dominant present vegetation:* Shadscale, black greasewood, bottlebrush squirreltail**Typical Profile***Depth:* 0 to 5 inches*Texture:* Silt loam*Structure:* Platy*Consistence:* Hard, very friable*Reaction:* Strongly alkaline*Salinity:* 20 to 40 millimhos per centimeter*Sodicity (SAR):* 40 to 50*Depth:* 5 to 68 inches*Texture:* Stratified silt loam to silty clay loam*Structure:* Massive*Consistence:* Hard, friable



*Reaction:* Strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 25 to 50

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 11 to 12 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—4L

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

#### **Characteristics of the Ocala Soil, Occasionally Flooded**

*Classification:* Aeric Halaquepts, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* The higher alluvial flats near shallow channels

*Parent material:* Mixed silty alluvium that includes volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 5,500 to 6,400 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Black greasewood, rubber rabbitbrush, basin wildrye, alkali sacaton

#### **Typical Profile**

*Depth:* 0 to 4 inches

*Texture:* Silty clay loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Very strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 30 to 50

*Depth:* 4 to 36 inches

*Texture:* Silt loam, silty clay loam

*Structure:* Massive

*Consistence:* Hard, brittle

*Reaction:* Strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 20 to 35

*Depth:* 36 to 60 inches

*Texture:* Silt loam, silty clay loam

*Structure:* Massive

*Consistence:* Very hard, very firm

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 20 to 35

#### **Soil and Water Features**

*Depth to a seasonal high water table:* 42 to 60 inches

*Frequency of flooding:* Occasional for brief to long periods in February through May

*Permeability:* Slow

*Available water capacity:* 10 to 12 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Very slow

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—4L

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* High

#### **Characteristics of the Ocala Soil, Rarely Flooded**

*Classification:* Aeric Halaquepts, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* The lower alluvial flats that are subject to ponding

*Parent material:* Mixed silty alluvium that includes volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 5,500 to 6,400 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Black greasewood, rubber rabbitbrush, basin wildrye

#### **Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Silty clay loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Very strongly alkaline

*Salinity:* 40 to 50 millimhos per centimeter

*Sodicity (SAR):* 40 to 60

*Depth:* 6 to 13 inches

*Texture:* Silt loam, silty clay loam

*Structure:* Massive

*Consistence:* Hard, brittle

*Reaction:* Strongly alkaline

*Salinity:* 25 to 40 millimhos per centimeter

*Sodicity (SAR):* 25 to 40

*Depth:* 13 to 60 inches

*Texture:* Silt loam, silty clay loam  
*Structure:* Massive  
*Consistence:* Very hard, very firm  
*Reaction:* Strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 25 to 40

#### **Soil and Water Features**

*Depth to a seasonal high water table:* 42 to 60 inches  
*Frequency of flooding:* Rare  
*Permeability:* Slow  
*Available water capacity:* 10 to 12 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Very slow  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.43; T value—5;  
 wind erodibility group—4L  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* High

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Aquic Durorthidic Torriorthents, fine-silty, mixed, mesic  
*Positions on landscape:* Inset fans within alluvial flats  
*Distinctive present vegetation:* Basin big sagebrush, basin wildrye

##### **Inclusion 2**

*Positions on landscape:* Irregularly shaped depressions and sink areas  
*Distinctive present vegetation:* None

##### **Inclusion 3**

*Classification:* Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic  
*Positions on landscape:* Convex, stabilized sand sheets  
*Distinctive present vegetation:* Wyoming big sagebrush, Thurber needlegrass

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Batan Soil**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor

##### **Ocala Soil, Occasionally Flooded**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor

##### **Ocala Soil, Rarely Flooded**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor

#### **Suitability and Limitations for Selected Uses**

##### **Batan Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium

*Roadfill:* Poor—low strength

*Topsoil:* Poor—excess salt, excess sodium

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Severe—low strength

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

##### **Ocala Soil, Occasionally Flooded**

*Range seeding:* Poor—excess salt, excess sodium

*Roadfill:* Poor—low strength

*Topsoil:* Poor—excess salt, excess sodium

*Daily cover for landfill:* Poor—excess salt, excess sodium

*Shallow excavations:* Moderate—wetness, flooding

*Local roads and streets:* Severe—low strength, flooding, frost action

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

##### **Ocala Soil, Rarely Flooded**

*Range seeding:* Poor—excess salt, excess sodium

*Roadfill:* Poor—low strength

*Topsoil:* Poor—excess salt, excess sodium

*Daily cover for landfill:* Poor—excess sodium

*Shallow excavations:* Moderate—wetness

*Local roads and streets:* Severe—low strength, frost action

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Restrictive Features for Selected Practices**

##### **Batan Soil**

*Drainage:* Deep to water

*Irrigation:* Excess salt, excess sodium

*Terraces and diversions:* Erodes easily

#### **Interpretive Groups**

*Land capability classification:* Batan soil—VII<sub>s</sub>, nonirrigated; Ocala soils—VII<sub>w</sub>, nonirrigated

*Range site:* Batan soil—024X003N; Ocala soil, occasionally flooded—024X007N; Ocala soil, rarely

flooded—024X011N; Inclusion 1—024X006N;  
Inclusion 2—none; Inclusion 3—024X005N

### **170—Beoska-Orovada association**

*Positions on landscape:* Fan piedmonts

#### **Composition**

*Major components:*

Beoska gravelly sandy loam, 2 to 4 percent slopes—60 percent

Orovada fine sandy loam, rarely flooded, 2 to 8 percent slopes—25 percent

*Contrasting inclusions:*

Durixerollic Haplargids, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—7 percent

Xerollic Camborthids, coarse-loamy, mixed, mesic, 2 to 4 percent slopes—4 percent

Oxcorel very fine sandy loam, 0 to 4 percent slopes—4 percent

#### **Characteristics of the Beoska Soil**

*Classification:* Duric Natrargids, fine-loamy, mixed, mesic

*Positions on landscape:* Summits of fan piedmont remnants

*Parent material:* Loess over loamy and gravelly mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 5,800 to 6,000 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bottlebrush squirreltail

#### **Typical Profile**

*Depth:* 0 to 13 inches

*Texture:* Gravelly sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Depth:* 13 to 24 inches

*Texture:* Silty clay loam, silt loam

*Structure:* Prismatic

*Consistence:* Hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

*Depth:* 24 to 55 inches

*Texture:* Gravelly very fine sandy loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 25 to 40

*Depth:* 55 to 60 inches

*Texture:* Very gravelly fine sandy loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 25 to 40

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 6.8 to 7.8 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.20; T value—5; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

#### **Characteristics of the Orovada Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Inset fan remnants

*Parent material:* Loess that is high in content of volcanic ash over mixed alluvium

*Slope:* 2 to 8 percent

*Elevation:* 5,800 to 6,000 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

#### **Typical Profile**

*Depth:* 0 to 8 inches

*Texture:* Fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 8 to 20 inches

*Texture:* Fine sandy loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 20 to 60 inches  
*Texture:* Stratified fine sandy loam to silt loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 4 to 8 millimhos per centimeter

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* Rare  
*Permeability:* Moderate  
*Available water capacity:* 8.4 to 9.6 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Medium  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* The lower side slopes of fan piedmont remnants  
*Distinctive present vegetation:* Wyoming big sagebrush, spiny hopsage

##### **Inclusion 2**

*Classification:* Xerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Broad inset fans  
*Distinctive present vegetation:* Wyoming big sagebrush, Thurber needlegrass

##### **Inclusion 3**

*Classification:* Duric Natrargids, fine, montmorillonitic, mesic  
*Positions on landscape:* The higher summits of fan piedmont remnants  
*Distinctive present vegetation:* Shadscale, bud sagebrush

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Beoska Soil**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor

##### **Orovada Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

##### **Beoska Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium  
*Roadfill:* Good  
*Topsoil:* Poor—small stones, excess salt, area reclaim  
*Daily cover for landfill:* Poor—small stones  
*Shallow excavations:* Slight  
*Local roads and streets:* Slight  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—excess salt, excess sodium  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

##### **Orovada Soil**

*Range seeding:* Fair—too arid  
*Roadfill:* Good  
*Topsoil:* Fair—small stones, thin layer  
*Daily cover for landfill:* Good  
*Shallow excavations:* Slight  
*Local roads and streets:* Moderate—frost action, flooding  
*Pond reservoir areas:* Moderate—seepage, slope  
*Embankments, dikes, and levees:* Severe—piping  
*Sand:* Improbable—excess fines  
*Gravel:* Improbable—excess fines

#### **Interpretive Groups**

*Land capability classification:* Beoska soil—IIIe, irrigated, and VIIc, nonirrigated; Orovada soil—IIIe, irrigated, and VIc, nonirrigated  
*Range site:* Beoska soil—024X002N; Orovada soil—028B010N; Inclusion 1—024X020N; Inclusion 2—024X005N; Inclusion 3—024X002N

#### **171—Beoska silt loam, 2 to 8 percent slopes**

*Positions on landscape:* Fan piedmonts

#### **Composition**

*Major component:*

Beoska silt loam, 2 to 8 percent slopes—85 percent

*Contrasting inclusions:*

Entic Durorthids, coarse-loamy, mixed, mesic, 2 to 8 percent slopes—5 percent

Broyles very fine sandy loam, 2 to 8 percent slopes—4 percent

Tenabo silt loam, 2 to 8 percent slopes—4 percent

Orovada fine sandy loam, 2 to 8 percent slopes—2 percent

#### **Characteristics of the Beoska Soil**

*Classification:* Duric Natrargids, fine-loamy, mixed, mesic

*Positions on landscape:* Fan piedmont remnants  
*Parent material:* Loess over loamy and gravelly mixed alluvium  
*Slope:* 2 to 8 percent  
*Elevation:* 5,100 to 5,600 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bottlebrush squirreltail

#### **Typical Profile**

*Depth:* 0 to 13 inches  
*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Depth:* 13 to 24 inches  
*Texture:* Silty clay loam, silt loam  
*Structure:* Prismatic  
*Consistence:* Hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 20 to 40  
*Depth:* 24 to 55 inches  
*Texture:* Gravelly very fine sandy loam  
*Structure:* Massive  
*Consistence:* Soft, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 16 to 30 millimhos per centimeter  
*Sodicity (SAR):* 40 to 60  
*Depth:* 55 to 60 inches  
*Texture:* Very gravelly fine sandy loam  
*Structure:* Massive  
*Consistence:* Soft, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 16 to 30 millimhos per centimeter  
*Sodicity (SAR):* 40 to 60

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 7.8 to 9.7 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Medium  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Entic Durorthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Fan piedmont remnants  
*Distinctive present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

##### **Inclusion 2**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* The lower inset fans and fan skirts  
*Distinctive present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

##### **Inclusion 3**

*Classification:* Typic Nadurargids, loamy, mixed, mesic, shallow  
*Positions on landscape:* The higher summits of fan piedmont remnants  
*Distinctive present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

##### **Inclusion 4**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Drainageways, the higher inset fans  
*Distinctive present vegetation:* Wyoming big sagebrush, spiny hopsage, Indian ricegrass

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor

#### **Suitability and Limitations for Selected Uses**

*Range seeding:* Poor—too arid, excess salt, excess sodium  
*Roadfill:* Good  
*Topsoil:* Poor—small stones, excess salt, area reclaim  
*Daily cover for landfill:* Poor—small stones  
*Shallow excavations:* Slight  
*Local roads and streets:* Slight  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—excess salt, excess sodium  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

### ***Interpretive Groups***

*Land capability classification:* Beoska soil—IIIe, irrigated; VIIs, nonirrigated

*Range site:* Beoska soil—024X002N; Inclusions 1, 2, and 3—024X002N; Inclusion 4—024X020N

### **172—Beoska-Tenabo complex**

*Positions on landscape:* Fan piedmonts

#### ***Composition***

*Major components:*

Beoska silt loam, 0 to 2 percent slopes—60 percent

Tenabo silt loam, 0 to 2 percent slopes—30 percent

*Contrasting inclusions:*

Durixerollic Camborthids, loamy-skeletal, mixed, mesic, 0 to 2 percent slopes—7 percent

Haplic Nadurargids, clayey, montmorillonitic, mesic, shallow, 0 to 2 percent slopes—3 percent

#### ***Characteristics of the Beoska Soil***

*Classification:* Duric Natrargids, fine-loamy, mixed, mesic

*Positions on landscape:* The lower fan piedmont remnants

*Parent material:* Loess over loamy and gravelly mixed alluvium

*Slope:* 0 to 2 percent

*Elevation:* 5,100 to 5,600 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bottlebrush squirreltail

#### ***Typical Profile***

*Depth:* 0 to 13 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 13 to 24 inches

*Texture:* Silty clay loam, silt loam

*Structure:* Prismatic

*Consistence:* Hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

*Depth:* 24 to 55 inches

*Texture:* Gravelly very fine sandy loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

*Depth:* 55 to 60 inches

*Texture:* Very gravelly fine sandy loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

#### ***Soil and Water Features***

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 7.8 to 9.7 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

#### ***Characteristics of the Tenabo Soil***

*Classification:* Typic Nadurargids, loamy, mixed, mesic, shallow

*Positions on landscape:* The higher fan piedmont remnants

*Parent material:* Thin loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 0 to 2 percent

*Elevation:* 5,100 to 5,500 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass

#### ***Typical Profile***

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 13 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 5 to 10

*Depth:* 13 to 20 inches

*Texture:* Clay loam, gravelly clay loam, silty clay loam  
*Structure:* Prismatic  
*Consistence:* Hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 13 to 25  
*Depth:* 20 to 39 inches  
*Material:* Indurated hardpan  
*Structure:* Platy  
*Consistence:* Extremely hard, extremely firm  
*Depth:* 39 to 60 inches  
*Texture:* Stratified very gravelly sandy loam to extremely gravelly coarse sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Strongly alkaline  
*Salinity:* 4 to 16 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46

#### **Soil and Water Features**

*Depth to the hardpan:* 9 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 2.8 to 3.2 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Slow  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.55; T value—1; wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—moderate  
*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Durixerollic Camborthids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Fan drainageways  
*Distinctive present vegetation:* Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail

##### **Inclusion 2**

*Classification:* Haplic Nadurargids, clayey, montmorillonitic, mesic, shallow  
*Positions on landscape:* The intermediate part of fan piedmont remnants  
*Distinctive present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Beoska Soil**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor

##### **Tenabo Soil**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor

#### **Suitability and Limitations for Selected Uses**

##### **Beoska Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium  
*Roadfill:* Good  
*Topsoil:* Poor—small stones, excess salt, area reclaim  
*Daily cover for landfill:* Poor—small stones  
*Shallow excavations:* Slight  
*Local roads and streets:* Slight  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—excess salt, excess sodium  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

##### **Tenabo Soil**

*Range seeding:* Poor—too arid, droughty, excess sodium  
*Roadfill:* Poor—cemented pan  
*Topsoil:* Poor—cemented pan, small stones, too sandy  
*Daily cover for landfill:* Poor—cemented pan, seepage, too sandy  
*Shallow excavations:* Severe—cemented pan, cutbanks cave  
*Local roads and streets:* Severe—cemented pan  
*Pond reservoir areas:* Severe—seepage, cemented pan  
*Embankments, dikes, and levees:* Severe—seepage, excess sodium, excess salt  
*Sand:* Probable source  
*Gravel:* Probable source

#### **Interpretive Groups**

*Land capability classification:* Beoska soil—IIIs, irrigated, and VIIs, nonirrigated; Tenabo soil—IVs, irrigated, and VIIs, nonirrigated  
*Range site:* Beoska and Tenabo soils—024X002N; Inclusion 1—024X020N; Inclusion 2—024X002N

#### **173—Beoska-Allor association**

*Positions on landscape:* Fan piedmonts

#### **Composition**

*Major components:*

Beoska very fine sandy loam, 2 to 8 percent slopes—55 percent

Allor gravelly loam, 8 to 15 percent slopes—30 percent

*Contrasting inclusions:*

Durixerollic Haplargids, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—9 percent

Durixerollic Haplargids, loamy-skeletal, mixed, mesic, 15 to 30 percent slopes—3 percent

Oxcorel gravelly loam, 2 to 4 percent slopes—3 percent

### **Characteristics of the Beoska Soil**

*Classification:* Duric Natrargids, fine-loamy, mixed, mesic

*Positions on landscape:* Summits of fan piedmont remnants

*Parent material:* Loess over loamy and gravelly mixed alluvium

*Slope:* 2 to 8 percent

*Elevation:* 5,100 to 5,900 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bottlebrush squirreltail

### **Typical Profile**

*Depth:* 0 to 13 inches

*Texture:* Very fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 13 to 24 inches

*Texture:* Silty clay loam, silt loam

*Structure:* Prismatic

*Consistence:* Hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

*Depth:* 24 to 55 inches

*Texture:* Gravelly very fine sandy loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

*Depth:* 55 to 60 inches

*Texture:* Very gravelly fine sandy loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 7.8 to 9.7 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.49; T value—5; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

### **Characteristics of the Allor Soil**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* Side slopes of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 8 to 15 percent

*Elevation:* 5,200 to 5,900 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 12 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 12 to 34 inches

*Texture:* Gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 34 to 60 inches

*Texture:* Gravelly loamy sand, very gravelly loamy sand

*Structure:* Massive

*Consistence:* Very hard, firm

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches



*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 4.9 to 6.4 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Medium  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.24; T value—5;  
     wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Fan drainageways  
*Distinctive present vegetation:* Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail

#### **Inclusion 2**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Side slopes of fan piedmont remnants  
*Distinctive present vegetation:* Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail

#### **Inclusion 3**

*Classification:* Duric Natrargids, fine, montmorillonitic, mesic  
*Positions on landscape:* The higher summits of fan piedmont remnants  
*Distinctive present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Beoska Soil**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor

#### **Allor Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Beoska Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium  
*Roadfill:* Good  
*Topsoil:* Poor—small stones, excess salt, area reclaim  
*Daily cover for landfill:* Poor—small stones  
*Shallow excavations:* Slight

*Local roads and streets:* Slight  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—excess salt, excess sodium  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Allor Soil**

*Range seeding:* Fair—too arid  
*Roadfill:* Good  
*Topsoil:* Poor—small stones, area reclaim  
*Daily cover for landfill:* Poor—small stones  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Moderate—frost action, shrink-swell, slope  
*Pond reservoir areas:* Severe—slope  
*Embankments, dikes, and levees:* Severe—seepage  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Beoska soil—IIIe, irrigated, and VIIs, nonirrigated; Allor soil—IVe, irrigated, and VIIc, nonirrigated  
*Range site:* Beoska soil—024X002N; Allor soil—027X008N; Inclusions 1 and 2—024X020N; Inclusion 3—024X002N

## **174—Beoska-Chiara association**

*Positions on landscape:* Fan piedmonts

### **Composition**

#### **Major components:**

Beoska silt loam, 2 to 8 percent slopes—55 percent  
 Chiara fine sandy loam, 2 to 8 percent slopes—30 percent

#### **Contrasting inclusions:**

Xerollic Durargids, loamy-skeletal, mixed, mesic, shallow, 2 to 8 percent slopes—7 percent  
 Durixerollic Camborthids, fine-loamy, mixed, mesic, 0 to 4 percent slopes—4 percent  
 Tenabo silt loam, 2 to 8 percent slopes—4 percent

### **Characteristics of the Beoska Soil**

*Classification:* Duric Natrargids, fine-loamy, mixed, mesic

*Positions on landscape:* The lower fan piedmont remnants

*Parent material:* Loess over loamy and gravelly mixed alluvium

*Slope:* 2 to 8 percent

*Elevation:* 5,100 to 5,500 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days  
*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bottlebrush squirreltail

**Typical Profile**

*Depth:* 0 to 13 inches  
*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

*Depth:* 13 to 24 inches  
*Texture:* Silty clay loam, silt loam  
*Structure:* Prismatic  
*Consistence:* Hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46

*Depth:* 24 to 55 inches  
*Texture:* Gravelly very fine sandy loam  
*Structure:* Massive  
*Consistence:* Soft, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 16 to 30 millimhos per centimeter  
*Sodicity (SAR):* 46 to 60

*Depth:* 55 to 60 inches  
*Texture:* Very gravelly fine sandy loam  
*Structure:* Massive  
*Consistence:* Soft, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 16 to 30 millimhos per centimeter  
*Sodicity (SAR):* 46 to 60

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 7.8 to 9.7 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Medium  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* Low

**Characteristics of the Chiara Soil**

*Classification:* Xerollic Durorthids, loamy, mixed, mesic, shallow

*Positions on landscape:* The higher fan piedmont remnants  
*Parent material:* Loess mantle that is high in content of volcanic ash over alluvium  
*Slope:* 2 to 8 percent  
*Elevation:* 5,100 to 5,500 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

**Typical Profile**

*Depth:* 0 to 5 inches  
*Texture:* Fine sandy loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 5 to 16 inches  
*Texture:* Silt loam, loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 4 millimhos per centimeter

*Depth:* 16 inches  
*Material:* Indurated hardpan  
*Structure:* Massive  
*Consistence:* Extremely hard, extremely firm

**Soil and Water Features**

*Depth to the hardpan:* 10 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 2.4 to 2.9 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.37; T value—1; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

**Contrasting Inclusions**

**Inclusion 1**

*Classification:* Xerollic Durargids, loamy-skeletal, mixed, mesic, shallow  
*Positions on landscape:* Fan drainageways  
*Distinctive present vegetation:* Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail

**Inclusion 2**

*Classification:* Durixerollic Camborthids, fine-loamy, mixed, mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Basin big sagebrush, basin wildrye

**Inclusion 3**

*Classification:* Typic Nadurargids, loamy, mixed, mesic, shallow

*Positions on landscape:* Summits of fan piedmont remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Beoska Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

**Chiara Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses****Beoska Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium

*Roadfill:* Good

*Topsoil:* Poor—small stones, excess salt, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Slight

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Chiara Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—cemented pan

*Daily cover for landfill:* Poor—cemented pan

*Shallow excavations:* Severe—cemented pan

*Local roads and streets:* Severe—cemented pan

*Pond reservoir areas:* Severe—cemented pan

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Beoska soil—IIIe, irrigated,

and VIIs, nonirrigated; Chiara soil—IVe, irrigated, and VIIs, nonirrigated

*Range site:* Beoska soil—024X002N; Chiara soil—024X005N; Inclusion 1—024X020N; Inclusion 2—028B003N; Inclusion 3—024X002N

**175—Beoska-Whirlo-Misad association**

*Positions on landscape:* Fan piedmonts

**Composition**

*Major components:*

Beoska very fine sandy loam, 0 to 2 percent slopes—30 percent

Whirlo silt loam, 0 to 2 percent slopes—30 percent

Misad gravelly sandy loam, 0 to 2 percent slopes—25 percent

*Contrasting inclusions:*

Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 0 to 2 percent slopes—8 percent

Duric Natrargids, fine-loamy, mixed, mesic, 0 to 2 percent slopes—7 percent

**Characteristics of the Beoska Soil**

*Classification:* Duric Natrargids, fine-loamy, mixed, mesic

*Positions on landscape:* Fan piedmont remnants

*Parent material:* Loess over loamy and gravelly mixed alluvium

*Slope:* 0 to 2 percent

*Elevation:* 5,200 to 5,400 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bottlebrush squirreltail

**Typical Profile**

*Depth:* 0 to 13 inches

*Texture:* Very fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 13 to 24 inches

*Texture:* Silty clay loam, silt loam

*Structure:* Prismatic

*Consistence:* Hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

*Depth:* 24 to 55 inches

*Texture:* Gravelly very fine sandy loam  
*Structure:* Massive  
*Consistence:* Soft, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 16 to 30 millimhos per centimeter  
*Sodicity (SAR):* 46 to 60  
*Depth:* 55 to 60 inches  
*Texture:* Very gravelly fine sandy loam  
*Structure:* Massive  
*Consistence:* Soft, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 16 to 30 millimhos per centimeter  
*Sodicity (SAR):* 46 to 60

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 7.8 to 9.7 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.49; T value—5; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* Low

#### **Characteristics of the Whirlo Soil**

*Classification:* Typic Camborthids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Inset fan remnants  
*Parent material:* Mixed alluvium that includes loess  
*Slope:* 0 to 2 percent  
*Elevation:* 5,200 to 5,400 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass

#### **Typical Profile**

*Depth:* 0 to 12 inches  
*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5  
*Depth:* 12 to 24 inches  
*Texture:* Very gravelly fine sandy loam  
*Structure:* Massive

*Consistence:* Soft, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 8 millimhos per centimeter  
*Sodicity (SAR):* 2 to 10  
*Depth:* 24 to 60 inches  
*Texture:* Very gravelly coarse sandy loam  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Moderately alkaline  
*Salinity:* 4 to 16 millimhos per centimeter  
*Sodicity (SAR):* 2 to 10

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately rapid  
*Available water capacity:* 4.9 to 6.1 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Characteristics of the Misad Soil**

*Classification:* Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic  
*Positions on landscape:* Inset fans  
*Parent material:* Mixed alluvium that includes loess and volcanic ash  
*Slope:* 0 to 2 percent  
*Elevation:* 5,200 to 5,400 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

#### **Typical Profile**

*Depth:* 0 to 7 inches  
*Texture:* Gravelly sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 7 to 31 inches  
*Texture:* Stratified fine sandy loam to very gravelly sandy loam  
*Structure:* Massive  
*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

*Depth:* 31 to 60 inches

*Texture:* Stratified very gravelly loamy sand to extremely gravelly coarse sand

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately rapid

*Available water capacity:* 2.9 to 4.1 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.20; T value—5; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic

*Positions on landscape:* Channels

*Distinctive present vegetation:* Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail

#### **Inclusion 2**

*Classification:* Duric Natrargids, fine-loamy, mixed, mesic

*Positions on landscape:* Fan piedmont remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Beoska Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Whirlo Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

#### **Misad Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

### **Suitability and Limitations for Selected Uses**

#### **Beoska Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium

*Roadfill:* Good

*Topsoil:* Poor—small stones, excess salt, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Slight

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Whirlo Soil**

*Range seeding:* Poor—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim, excess salt

*Daily cover for landfill:* Poor—seepage, small stones

*Shallow excavations:* Slight

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

#### **Misad Soil**

*Range seeding:* Poor—too arid, excess salt

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

### **Interpretive Groups**

*Land capability classification:* Beoska soil—IIIs, irrigated, and VIIs, nonirrigated; Whirlo soil—IIc, irrigated, and VIIc, nonirrigated; Misad soil—IVs, irrigated, and VIIs, nonirrigated

*Range site:* Beoska, Whirlo, and Misad soils—024X002N; Inclusion 1—024X020N; Inclusion 2—024X002N

### **177—Beoska-Dewar-Orovada association**

*Positions on landscape:* Fan piedmonts

### **Composition**

#### *Major components:*

Beoska very fine sandy loam, 4 to 8 percent slopes—40 percent

Dewar gravelly loam, 2 to 8 percent slopes—25 percent

Orovada gravelly very fine sandy loam, 2 to 8 percent slopes—15 percent

#### *Contrasting inclusions:*

Durixerollic Haplargids, loamy-skeletal, mixed, mesic, 15 to 50 percent slopes—7 percent

Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow, 15 to 50 percent slopes—7 percent

Duric Natrargids, loamy-skeletal, mixed, mesic, 15 to 50 percent slopes—6 percent

### **Characteristics of the Beoska Soil**

*Classification:* Duric Natrargids, fine-loamy, mixed, mesic

*Positions on landscape:* Summits and shoulder slopes of fan piedmont remnants

*Parent material:* Loess over loamy and gravelly mixed alluvium

*Slope:* 4 to 8 percent

*Elevation:* 5,400 to 5,800 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bottlebrush squirreltail

#### **Typical Profile**

*Depth:* 0 to 13 inches

*Texture:* Very fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 13 to 24 inches

*Texture:* Silty clay loam, silt loam

*Structure:* Prismatic

*Consistence:* Hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 25 to 40

*Depth:* 24 to 55 inches

*Texture:* Gravelly very fine sandy loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

*Depth:* 55 to 60 inches

*Texture:* Very gravelly fine sandy loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 7.8 to 9.7 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.49; T value—5; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

### **Characteristics of the Dewar Soil**

*Classification:* Xerollic Durargids, loamy, mixed, mesic, shallow

*Positions on landscape:* Concave summits and convex shoulder slopes of fan piedmont remnants

*Parent material:* Loess and mixed silty alluvium that include volcanic ash

*Slope:* 2 to 8 percent

*Elevation:* 5,400 to 5,800 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, Indian ricegrass

#### **Typical Profile**

*Depth:* 0 to 4 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Depth:* 4 to 14 inches

*Texture:* Gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Depth:* 14 to 50 inches

*Material:* Indurated hardpan

*Structure:* Platy

*Consistence:* Extremely hard, extremely firm

### **Soil and Water Features**

*Depth to the hardpan:* 13 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.7 to 2.3 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.37; T value—1; wind erodibility group—7

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Orovada Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Inset fans

*Parent material:* Loess that is high in content of volcanic ash over mixed alluvium

*Slope:* 2 to 8 percent

*Elevation:* 5,400 to 5,800 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

### **Typical Profile**

*Depth:* 0 to 8 inches

*Texture:* Gravelly very fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 8 to 20 inches

*Texture:* Fine sandy loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 20 to 60 inches

*Texture:* Stratified fine sandy loam to silt loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 8.3 to 9.6 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.37; T value—5; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* North-facing side slopes of fan piedmont remnants

*Distinctive present vegetation:* Wyoming big sagebrush, Thurber needlegrass

#### **Inclusion 2**

*Classification:* Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow

*Positions on landscape:* Side slopes of rock pediment remnants

*Distinctive present vegetation:* Shadscale, Wyoming big sagebrush, galleta

#### **Inclusion 3**

*Classification:* Duric Natrargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* South-facing side slopes of fan piedmont remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Beoska Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Dewar Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Orovada Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### ***Suitability and Limitations for Selected Uses***

#### **Beoska Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium

*Roadfill:* Good

*Topsoil:* Poor—small stones, excess salt, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Slight

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Dewar Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—cemented pan, small stones

*Daily cover for landfill:* Poor—cemented pan

*Shallow excavations:* Severe—cemented pan

*Local roads and streets:* Severe—cemented pan

*Pond reservoir areas:* Severe—cemented pan

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Orovada Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### ***Interpretive Groups***

*Land capability classification:* Beoska soil—IIIe, irrigated, and VIIs, nonirrigated; Dewar soil—IVe, irrigated, and VIIs, nonirrigated; Orovada soil—IIIe, irrigated, and VIc, nonirrigated

*Range site:* Beoska soil—024X002N; Dewar soil—024X005N; Orovada soil—028B010N; Inclusion 1—024X005N; Inclusion 2—024X045N; Inclusion 3—024X002N

### **180—Needle Peak-Batan-Yobe association**

*Positions on landscape:* Alluvial flats, fan skirts

### ***Composition***

#### ***Major components:***

Needle Peak silt loam, 0 to 2 percent slopes—40 percent

Batan silt loam, 0 to 2 percent slopes—30 percent

Yobe silt loam, 0 to 2 percent slopes—20 percent

#### ***Contrasting inclusions:***

Xeric Torriorthents, fine-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—7 percent

Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 0 to 2 percent slopes—3 percent

### ***Characteristics of the Needle Peak Soil***

*Classification:* Aquic Torriorthents, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Fan skirts and inset fans dissecting alluvial flats and lake plains

*Parent material:* Mixed alluvium that includes loess and volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 5,600 to 5,700 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Basin wildrye, rubber rabbitbrush, basin big sagebrush, black greasewood

### ***Typical Profile***

*Depth:* 0 to 8 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Depth:* 8 to 60 inches

*Texture:* Silt loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 2 to 4 millimhos per centimeter

### ***Soil and Water Features***

*Depth to a seasonal high water table:* 48 to 72 inches

*Frequency of flooding:* Occasional for brief periods in March through June

*Permeability:* Moderately slow

*Available water capacity:* 11 to 12 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Very slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight



*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* High

### **Characteristics of the Batan Soil**

*Classification:* Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic  
*Positions on landscape:* Alluvial flat remnants  
*Parent material:* Silty alluvium that is high in content of loess and pyroclastic material  
*Slope:* 0 to 2 percent  
*Elevation:* 5,600 to 5,700 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Shadscale, black greasewood, bottlebrush squirreltail

### **Typical Profile**

*Depth:* 0 to 5 inches  
*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 20 to 40 millimhos per centimeter  
*Sodicity (SAR):* 46 to 60  
*Depth:* 5 to 68 inches  
*Texture:* Stratified silt loam to silty clay loam  
*Structure:* Massive  
*Consistence:* Hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 11 to 12 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—4L  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* Low

### **Characteristics of the Yobe Soil**

*Classification:* Aeric Halaquepts, fine-silty, mixed (calcareous), mesic  
*Positions on landscape:* Alluvial flats  
*Parent material:* Mixed silty lacustrine sediment

*Slope:* 0 to 2 percent  
*Elevation:* 5,600 to 5,700 feet  
*Average annual precipitation:* About 6 inches  
*Average annual air temperature:* About 51 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Black greasewood, basin wildrye, rubber rabbitbrush, alkali sacaton

### **Typical Profile**

*Depth:* 0 to 16 inches  
*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 25 to 40 millimhos per centimeter  
*Sodicity (SAR):* 46 to 60  
*Depth:* 16 to 60 inches  
*Texture:* Silt loam, silty clay loam  
*Structure:* Massive  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 16 to 25 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46

### **Soil and Water Features**

*Depth to a seasonal high water table:* 36 to 60 inches  
*Frequency of flooding:* Frequent for brief to long periods in January through April  
*Permeability:* Moderately slow  
*Available water capacity:* 10 to 12 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Very slow  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.49; T value—5; wind erodibility group—4L  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* High

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Xeric Torriorthents, fine-silty, mixed (calcareous), mesic  
*Positions on landscape:* The lower fan skirt margins intermingled with alluvial flat remnants  
*Distinctive present vegetation:* Black greasewood, basin wildrye, basin big sagebrush

#### **Inclusion 2**

*Classification:* Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic  
*Positions on landscape:* The highest fan skirt margins  
*Distinctive present vegetation:* Shadscale, bud sagebrush, Indian ricegrass

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Needle Peak Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

*Wetland plants:* Fair

*Shallow water areas:* Fair

**Batan Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

**Yobe Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

*Wetland plants:* Poor

*Shallow water areas:* Fair

**Suitability and Limitations for Selected Uses****Needle Peak Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Poor—low strength

*Topsoil:* Good

*Daily cover for landfill:* Fair—too clayey

*Shallow excavations:* Moderate—wetness, flooding

*Local roads and streets:* Severe—low strength, flooding, frost action

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Moderate—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Batan Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium

*Roadfill:* Poor—low strength

*Topsoil:* Poor—excess salt, excess sodium

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Severe—low strength

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Yobe Soil**

*Range seeding:* Poor—excess salt, excess sodium

*Roadfill:* Good

*Topsoil:* Poor—excess salt, excess sodium

*Daily cover for landfill:* Poor—excess salt, excess sodium

*Shallow excavations:* Moderate—wetness, flooding

*Local roads and streets:* Severe—low strength, flooding, frost action

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Restrictive Features for Selected Practices****Batan Soil**

*Drainage:* Deep to water

*Irrigation:* Excess salt, excess sodium

*Terraces and diversions:* Erodes easily

**Interpretive Groups**

*Land capability classification:* Needle Peak soil—IIw, irrigated, and VIw, nonirrigated; Batan soil—VIIs, nonirrigated; Yobe soil—VIIw, nonirrigated

*Range site:* Needle Peak soil—024X006N; Batan soil—024X003N; Yobe soil—024X007N; Inclusion 1—024X022N; Inclusion 2—028B017N

**190—Wardenot-Sundown association**

*Positions on landscape:* Fan skirts, inset fans

**Composition**

*Major components:*

Wardenot gravelly fine sandy loam, 2 to 4 percent slopes—70 percent

Sundown fine sand, 2 to 4 percent slopes—20 percent

*Contrasting inclusions:*

Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic, 0 to 2 percent slopes—6 percent

Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 2 to 4 percent slopes—4 percent

**Characteristics of the Wardenot Soil**

*Classification:* Typic Torriorthents, sandy-skeletal, mixed, mesic

*Positions on landscape:* Fan skirts

*Parent material:* Mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 5,600 to 5,700 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 51 degrees F

*Frost-free season:* About 130 days

*Dominant present vegetation:* Shadscale, Bailey greasewood, bottlebrush squirreltail, galleta

**Typical Profile**

*Depth:* 0 to 5 inches

*Texture:* Gravelly fine sandy loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 5 to 13  
*Depth:* 5 to 60 inches  
*Texture:* Stratified very gravelly fine sandy loam to extremely cobbly loamy sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 5 to 13

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* Rare  
*Permeability:* Moderately rapid  
*Available water capacity:* 2.7 to 5.0 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Medium  
*Hydrologic group:* A  
*Erosion factors (upper layer):* K value—0.10; T value—5; wind erodibility group—4  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Characteristics of the Sundown Soil**

*Classification:* Typic Torripsamments, mixed, mesic  
*Positions on landscape:* Sand sheets over fan skirts  
*Parent material:* Mixed alluvium, eolian deposits  
*Slope:* 2 to 4 percent  
*Elevation:* 5,600 to 5,700 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 53 degrees F  
*Frost-free season:* About 130 days  
*Dominant present vegetation:* Shadscale, Indian ricegrass, fourwing saltbush, sand dropseed

#### **Typical Profile**

*Depth:* 0 to 7 inches  
*Texture:* Fine sand  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Moderately alkaline  
*Depth:* 7 to 60 inches  
*Texture:* Loamy fine sand  
*Structure:* Massive  
*Consistence:* Soft, very friable  
*Reaction:* Strongly alkaline

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Rapid

*Available water capacity:* 5.1 to 5.8 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Very slow  
*Hydrologic group:* A  
*Erosion factors (upper layer):* K value—0.20; T value—5; wind erodibility group—1  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic  
*Positions on landscape:* The lower margins of fan skirts  
*Distinctive present vegetation:* Shadscale, Bailey greasewood, galleta

##### **Inclusion 2**

*Classification:* Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic  
*Positions on landscape:* Inset fans  
*Distinctive present vegetation:* Black sagebrush, bottlebrush squirreltail, shadscale

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Wardenot Soil**

*Wild herbaceous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Poor

##### **Sundown Soil**

*Wild herbaceous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Poor

#### **Suitability and Limitations for Selected Uses**

##### **Wardenot Soil**

*Range seeding:* Poor—too arid, droughty  
*Roadfill:* Fair—large stones  
*Topsoil:* Poor—small stones, area reclaim  
*Daily cover for landfill:* Poor—seepage, small stones  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Moderate—flooding, large stones  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—seepage  
*Sand:* Probable source  
*Gravel:* Probable source

##### **Sundown Soil**

*Range seeding:* Poor—too arid, droughty, too sandy  
*Roadfill:* Good  
*Topsoil:* Poor—too sandy  
*Daily cover for landfill:* Fair—too sandy

*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Slight  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Moderate—seepage  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Wardenot soil—IVe, irrigated, and VIIc, nonirrigated; Sundown soil—IVs, irrigated, and VIIs, nonirrigated  
*Range site:* Wardenot soil—029X017N; Sundown soil—029X012N; Inclusion 1—029X017N; Inclusion 2—028B011N

## **191—Wardenot-Laxal association**

*Positions on landscape:* Fan skirts, the lower fan piedmonts

### **Composition**

*Major components:*  
 Wardenot gravelly fine sandy loam, 2 to 4 percent slopes—50 percent  
 Laxal very gravelly fine sandy loam, occasionally flooded, 2 to 4 percent slopes—25 percent  
 Wardenot gravelly fine sandy loam, strongly saline, 0 to 2 percent slopes—15 percent  
*Contrasting inclusions:*  
 Unsel gravelly fine sandy loam, 0 to 2 percent slopes—6 percent  
 Typic Torriorthents, fine-loamy, mixed (calcareous), mesic, 0 to 2 percent slopes—4 percent

### **Characteristics of the Wardenot Soil**

*Classification:* Typic Torriorthents, sandy-skeletal, mixed, mesic  
*Positions on landscape:* Broad fan skirts  
*Parent material:* Mixed alluvium  
*Slope:* 2 to 4 percent  
*Elevation:* 5,600 to 5,700 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 51 degrees F  
*Frost-free season:* About 130 days  
*Dominant present vegetation:* Shadscale, Bailey greasewood, bottlebrush squirreltail, galleta

### **Typical Profile**

*Depth:* 0 to 5 inches  
*Texture:* Gravelly fine sandy loam  
*Structure:* Massive  
*Consistence:* Soft, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 13  
*Depth:* 5 to 60 inches  
*Texture:* Stratified very gravelly fine sandy loam to extremely cobbly loamy sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 13

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* Rare  
*Permeability:* Moderately rapid  
*Available water capacity:* 2.7 to 5.0 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Medium  
*Hydrologic group:* A  
*Erosion factors (upper layer):* K value—0.10; T value—5; wind erodibility group—4  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

### **Characteristics of the Laxal Soil**

*Classification:* Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic  
*Positions on landscape:* Inset fans  
*Parent material:* Alluvium derived from shale and volcanic rock  
*Slope:* 2 to 4 percent  
*Elevation:* 5,600 to 5,700 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 50 degrees F  
*Frost-free season:* About 130 days  
*Dominant present vegetation:* Shadscale, Bailey greasewood, galleta

### **Typical Profile**

*Depth:* 0 to 10 inches  
*Texture:* Very gravelly fine sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5  
*Depth:* 10 to 60 inches  
*Texture:* Stratified very gravelly sandy loam to very gravelly loamy coarse sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Occasional for very brief periods in July through September

*Permeability:* Moderately rapid

*Available water capacity:* 3.9 to 5.3 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.17; T value—5; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Wardenot Soil, Strongly Saline**

*Classification:* Typic Torriorthents, sandy-skeletal, mixed, mesic

*Positions on landscape:* Narrow, lower margins of fan skirts

*Parent material:* Mixed alluvium

*Slope:* 0 to 2 percent

*Elevation:* 5,600 to 5,700 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 51 degrees F

*Frost-free season:* About 130 days

*Dominant present vegetation:* Shadscale, black greasewood, bottlebrush squirreltail, galleta

### **Typical Profile**

*Depth:* 0 to 5 inches

*Texture:* Gravelly fine sandy loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 16 to 25 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

*Depth:* 5 to 60 inches

*Texture:* Stratified very gravelly fine sandy loam and extremely cobbly loamy sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Rare

*Permeability:* Moderately rapid

*Available water capacity:* 2.9 to 5.2 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Medium

*Hydrologic group:* A

*Erosion factors (upper layer):* K value—0.10; T value—5; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification :* Duric Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* The lower fan piedmont remnants

*Distinctive present vegetation:* Shadscale, Bailey greasewood, galleta

#### **Inclusion 2**

*Classification:* Typic Torriorthents, fine-loamy, mixed (calcareous), mesic

*Positions on landscape:* Adjacent alluvial flats

*Distinctive present vegetation:* Black greasewood, seepweed, inland saltgrass

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Wardenot Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

#### **Laxal Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

#### **Wardenot Soil, Strongly Saline**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

### **Suitability and Limitations for Selected Uses**

#### **Wardenot Soil**

*Range seeding:* Poor—too arid, droughty

*Roadfill:* Fair—large stones

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—flooding, large stones

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

#### **Laxal Soil**

*Range seeding:* Poor—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Severe—flooding

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

#### **Wardenot Soil, Strongly Saline**

*Range seeding:* Poor—too arid, droughty, excess salt

*Roadfill:* Fair—large stones

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—flooding, large stones

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage, excess salt

*Sand:* Probable source

*Gravel:* Probable source

#### **Restrictive Features for Selected Practices**

##### **Laxal Soil**

*Drainage:* Deep to water

*Irrigation:* Droughty, flooding, slope

*Terraces and diversions:* Too sandy

#### **Interpretive Groups**

*Land capability classification:* Wardenot soil—IVe, irrigated, and VIIc, nonirrigated; Laxal soil—IVw, irrigated, and VIIw, nonirrigated; Wardenot soil, strongly saline—VIIs, nonirrigated

*Range site:* Wardenot and Laxal soils—029X017N;

Wardenot soil, strongly saline—024X003N;

Inclusion 1—029X017N; Inclusion 2—028B020N

#### **200—Izo-Misad association**

*Positions on landscape:* Fan skirts, the lower fan piedmonts

#### **Composition**

*Major components:*

Izo very gravelly loamy sand, 2 to 4 percent slopes—60 percent

Misad gravelly sandy loam, 2 to 4 percent slopes—30 percent

*Contrasting inclusions:*

Unsel gravelly fine sandy loam, 0 to 2 percent slopes—6 percent

Durorthidic Torriorthents, fine-loamy, mixed (calcareous), mesic—4 percent

#### **Characteristics of the Izo Soil**

*Classification:* Typic Torriorthents, sandy-skeletal, mixed, mesic

*Positions on landscape:* Inset fans, areas adjacent to channels

*Parent material:* Mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 5,600 to 5,800 feet

*Average annual precipitation:* About 6 inches

*Average annual air temperature:* About 51 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Galleta, bottlebrush squirreltail, shadscale, Bailey greasewood

#### **Typical Profile**

*Depth:* 0 to 2 inches

*Texture:* Very gravelly loamy sand

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 2 to 60 inches

*Texture:* Very gravelly coarse sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Rare

*Permeability:* Rapid

*Available water capacity:* 1.2 to 2.4 inches

*Water-supplying capacity:* 5 inches

*Runoff:* Slow

*Hydrologic group:* A

*Erosion factors (upper layer):* K value—0.05; T value—5; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Misad Soil**

*Classification:* Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic

*Positions on landscape:* Fan skirts

*Parent material:* Mixed alluvium that includes loess and volcanic ash

*Slope:* 2 to 4 percent

*Elevation:* 5,600 to 5,800 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

#### **Typical Profile**

*Depth:* 0 to 7 inches

*Texture:* Gravelly sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 7 to 31 inches

*Texture:* Stratified fine sandy loam to very gravelly sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

*Depth:* 31 to 60 inches

*Texture:* Stratified very gravelly loamy sand to extremely gravelly coarse sand

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately rapid

*Available water capacity:* 2.9 to 4.1 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.20; T value—5; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Duric Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* The lower fan piedmont remnants

*Distinctive present vegetation:* Shadscale, Bailey greasewood, galleta

#### **Inclusion 2**

*Classification:* Durorthidic Torriorthents, fine-loamy, mixed (calcareous), mesic

*Positions on landscape:* Adjacent alluvial flat remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Izo Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

#### **Misad Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

### **Suitability and Limitations for Selected Uses**

#### **Izo Soil**

*Range seeding:* Poor—too arid, droughty, small stones

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—flooding

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

#### **Misad Soil**

*Range seeding:* Poor—too arid, excess salt

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

### ***Interpretive Groups***

*Land capability classification:* Izo soil—VIIs, nonirrigated;  
Misad soil—IVe, irrigated, and VIIs, nonirrigated  
*Range site:* Izo soil—029X017N; Misad soil—  
024X002N; Inclusion 1—029X017N; Inclusion 2—  
024X003N

### **201—Izo-Bubus association**

*Positions on landscape:* Fan skirts, alluvial flats

#### ***Composition***

*Major components:*

Izo gravelly loam, 0 to 4 percent slopes—65 percent  
Bubus very gravelly very fine sandy loam, eroded, 0 to  
2 percent slopes—25 percent

*Contrasting inclusions:*

Batan silt loam, 0 to 2 percent slopes—7 percent  
Playas—3 percent

#### ***Characteristics of the Izo Soil***

*Classification:* Typic Torriorthents, sandy-skeletal,  
mixed, mesic

*Positions on landscape:* Fan skirts

*Parent material:* Mixed alluvium

*Slope:* 0 to 4 percent

*Elevation:* 5,500 to 5,600 feet

*Average annual precipitation:* About 6 inches

*Average annual air temperature:* About 51 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Galleta, bottlebrush  
squirreltail, shadscale, Bailey greasewood

#### ***Typical Profile***

*Depth:* 0 to 2 inches

*Texture:* Gravelly loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 2 to 60 inches

*Texture:* Stratified gravelly loamy sand to very gravelly  
coarse sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

#### ***Soil and Water Features***

*Depth to a seasonal high water table:* More than 60  
inches

*Frequency of flooding:* Rare

*Permeability:* Rapid

*Available water capacity:* 1.4 to 2.6 inches

*Water-supplying capacity:* 5 inches

*Runoff:* Slow

*Hydrologic group:* A

*Erosion factors (upper layer):* K value—0.37; T value—5;  
wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

#### ***Characteristics of the Bubus Soil***

*Classification:* Durorthidic Torriorthents, coarse-loamy,  
mixed (calcareous), mesic

*Positions on landscape:* Alluvial flat remnants

*Parent material:* Mixed alluvium that is high in content of  
pyroclastic material

*Slope:* 0 to 2 percent

*Elevation:* 5,500 to 5,600 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Shadscale, black  
greasewood, bottlebrush squirreltail

#### ***Typical Profile***

*Depth:* 0 to 4 inches

*Texture:* Very gravelly very fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

*Depth:* 4 to 60 inches

*Texture:* Stratified sandy loam to silt loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

#### ***Soil and Water Features***

*Depth to a seasonal high water table:* More than 60  
inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 8.6 to 9.9 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.10; T value—5;  
wind erodibility group—5



*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic  
*Positions on landscape:* Alluvial flat remnants near areas of Playas  
*Distinctive present vegetation:* Shadscale, seepweed, black greasewood

#### **Inclusion 2**

*Positions on landscape:* Small sink areas  
*Distinctive present vegetation:* None

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Izo Soil**

*Wild herbaceous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Poor

#### **Bubus Soil**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor

### **Suitability and Limitations for Selected Uses**

#### **Izo Soil**

*Range seeding:* Poor—too arid, droughty  
*Roadfill:* Good  
*Topsoil:* Poor—small stones, area reclaim  
*Daily cover for landfill:* Poor—seepage, too sandy, small stones  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Moderate—flooding  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—seepage  
*Sand:* Probable source  
*Gravel:* Probable source

#### **Bubus Soil**

*Range seeding:* Poor—too arid, small stones, excess salt  
*Roadfill:* Good  
*Topsoil:* Poor—excess salt  
*Daily cover for landfill:* Good  
*Shallow excavations:* Slight  
*Local roads and streets:* Slight  
*Pond reservoir areas:* Moderate—seepage  
*Embankments, dikes, and levees:* Severe—piping, excess salt  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Izo and Bubus soils—VIIIs, nonirrigated

*Range site:* Izo soil—029X017N; Bubus soil—024X003N; Inclusion 1—024X003N; Inclusion 2—none

### **210—Laxal association**

*Positions on landscape:* Fan skirts, the lower fan piedmonts

### **Composition**

#### *Major components:*

Laxal gravelly fine sandy loam, 2 to 4 percent slopes—65 percent

Laxal very gravelly fine sandy loam, occasionally flooded, 2 to 4 percent slopes—20 percent

#### *Contrasting inclusions:*

Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 2 to 8 percent slopes—7 percent

Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 2 to 4 percent slopes—5 percent

Durorthidic Torriorthents, fine-loamy, mixed (calcareous), mesic, 2 to 4 percent slopes—3 percent

### **Characteristics of the Laxal Soil**

*Classification:* Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic

*Positions on landscape:* Fan skirts

*Parent material:* Alluvium derived from shale and volcanic rock

*Slope:* 2 to 4 percent

*Elevation:* 5,600 to 5,900 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 50 degrees F

*Frost-free season:* About 130 days

*Dominant present vegetation:* Shadscale, Bailey greasewood, galleta

### **Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 6 to 60 inches

*Texture:* Stratified very gravelly sandy loam to very gravelly loamy coarse sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 8 to 13

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Rare

*Permeability:* Moderately rapid

*Available water capacity:* 2.7 to 5.0 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.28; T value—5; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—moderate

*Potential for frost action:* Low

### **Characteristics of the Laxal Soil, Occasionally Flooded**

*Classification:* Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic

*Positions on landscape:* Inset fans

*Parent material:* Alluvium derived from shale and volcanic rock

*Slope:* 2 to 4 percent

*Elevation:* 5,600 to 5,900 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 50 degrees F

*Frost-free season:* About 130 days

*Dominant present vegetation:* Shadscale, Bailey greasewood, galleta

### **Typical Profile**

*Depth:* 0 to 10 inches

*Texture:* Very gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 10 to 60 inches

*Texture:* Stratified very gravelly sandy loam to very gravelly loamy coarse sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Occasional for very brief periods in July through September

*Permeability:* Moderately rapid

*Available water capacity:* 3.9 to 5.3 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.17; T value—5; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic

*Positions on landscape:* The upper margins of fan skirts

*Distinctive present vegetation:* Black sagebrush, needleandthread, spiny hopsage

#### **Inclusion 2**

*Classification:* Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic

*Positions on landscape:* Adjacent to channels

*Distinctive present vegetation:* Basin big sagebrush, spiny hopsage, needleandthread

#### **Inclusion 3**

*Classification:* Durorthidic Torriorthents, fine-loamy, mixed (calcareous), mesic

*Positions on landscape:* The lower margins of fan skirts

*Dominant present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Laxal Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Laxal Soil, Occasionally Flooded**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

### **Suitability and Limitations for Selected Uses**

#### **Laxal Soil**

*Range seeding:* Poor—too arid, excess salt

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—flooding

*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—seepage, excess salt

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Laxal Soil, Occasionally Flooded**

*Range seeding:* Poor—too arid, small stones

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Severe—flooding

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

#### **Restrictive Features for Selected Practices**

##### **Laxal Soil**

*Drainage:* Deep to water

*Irrigation:* Droughty, slope, excess salt

*Terraces and diversions:* Too sandy

##### **Laxal Soil, Occasionally Flooded**

*Drainage:* Deep to water

*Irrigation:* Droughty, flooding

*Terraces and diversions:* Too sandy

#### **Interpretive Groups**

*Land capability classification:* Laxal soil—IVs, irrigated, and VIIs, nonirrigated; Laxal soil, occasionally flooded—IVw, irrigated, and VIIw, nonirrigated

*Range site:* Laxal soils—029X017N; Inclusion 1—029X008N; Inclusion 2—028B009N; Inclusion 3—024X003N

### **211—Laxal gravelly fine sandy loam, occasionally flooded, 0 to 2 percent slopes**

*Positions on landscape:* Fan skirts

#### **Composition**

*Major component:*

Laxal gravelly fine sandy loam, occasionally flooded, 0 to 2 percent slopes—90 percent

*Contrasting inclusions:*

Typic Torriorthents, sandy-skeletal, mixed (calcareous), mesic, frequently flooded, 0 to 2 percent slopes—7 percent

Xeric Torriorthents, sandy-skeletal, mixed (calcareous), mesic, frequently flooded, 0 to 2 percent slopes—3 percent

#### **Characteristics of the Laxal Soil**

*Classification:* Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic

*Positions on landscape:* Fan skirts

*Parent material:* Alluvium derived from shale and volcanic rock

*Slope:* 0 to 2 percent

*Elevation:* 5,600 to 5,900 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 50 degrees F

*Frost-free season:* About 130 days

*Dominant present vegetation:* Shadscale, Bailey greasewood, galleta

#### **Typical Profile**

*Depth:* 0 to 10 inches

*Texture:* Gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 10 to 60 inches

*Texture:* Stratified very gravelly sandy loam to very gravelly loamy coarse sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Occasional for very brief periods in July through September

*Permeability:* Moderately rapid

*Available water capacity:* 3.9 to 5.3 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.28; T value—5; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Typic Torriorthents, sandy-skeletal, mixed (calcareous), mesic

*Positions on landscape:* Areas adjacent to channels

*Distinctive present vegetation:* Basin big sagebrush, rubber rabbitbrush, spiny hopsage

#### **Inclusion 2**

*Classification:* Xeric Torriorthents, sandy-skeletal, mixed (calcareous), mesic

*Positions on landscape:* Stable areas adjacent to channels

*Distinctive present vegetation:* Basin big sagebrush, spiny hopsage, needleandthread

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

#### **Suitability and Limitations for Selected Uses**

*Range seeding:* Poor—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Severe—flooding

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

#### **Restrictive Features for Selected Practices**

*Drainage:* Deep to water

*Irrigation:* Droughty, flooding

*Terraces and diversions:* Too sandy

#### **Interpretive Groups**

*Land capability classification:* Laxal soil—IIIw, irrigated, and VIIw, nonirrigated

*Range site:* Laxal soil—029X017N; Inclusion 1—028B009N; Inclusion 2—029X008N

### **212—Laxal-Tomel association**

*Positions on landscape:* Fan piedmonts

#### **Composition**

*Major components:*

Laxal gravelly fine sandy loam, 2 to 4 percent slopes—40 percent

Tomel gravelly fine sandy loam, 2 to 4 percent slopes—25 percent

Laxal gravelly fine sandy loam, occasionally flooded, 2 to 4 percent slopes—20 percent

#### **Contrasting inclusions:**

Entic Durorthids, loamy-skeletal, mixed, mesic, 2 to 4 percent slopes—6 percent

Xeric Torriorthents, sandy-skeletal, mixed (calcareous), mesic, 2 to 4 percent slopes—5 percent

Durorthidic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 2 to 4 percent slopes—4 percent

#### **Characteristics of the Laxal Soil**

*Classification:* Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic

*Positions on landscape:* Inset fan remnants

*Parent material:* Alluvium derived from shale and volcanic rock

*Slope:* 2 to 4 percent

*Elevation:* 5,600 to 5,900 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 50 degrees F

*Frost-free season:* About 130 days

*Dominant present vegetation:* Shadscale, Bailey greasewood, galleta

#### **Typical Profile**

*Depth:* 0 to 10 inches

*Texture:* Gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 10 to 60 inches

*Texture:* Stratified very gravelly sandy loam to very gravelly loamy coarse sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 8 to 13

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Rare

*Permeability:* Moderately rapid

*Available water capacity:* 2.7 to 5.0 inches

*Water-supplying capacity:* 6 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.28; T value—5; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—moderate  
*Potential for frost action:* Low

### **Characteristics of the Tomel Soil**

*Classification:* Typic Durargids, loamy-skeletal, mixed, mesic, shallow  
*Positions on landscape:* Fan piedmont remnants  
*Parent material:* Alluvium derived from limestone, shale, and chert  
*Slope:* 2 to 4 percent  
*Elevation:* 5,600 to 5,900 feet  
*Average annual precipitation:* About 6 inches  
*Average annual air temperature:* About 51 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Galleta, bottlebrush squirreltail, shadscale, Bailey greasewood

### **Typical Profile**

*Rock fragments on surface:* 55 percent pebbles  
*Depth:* 0 to 4 inches  
*Texture:* Gravelly fine sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5  
*Depth:* 4 to 18 inches  
*Texture:* Very gravelly clay loam, very gravelly sandy clay loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Very strongly alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 5 to 13  
*Depth:* 18 to 33 inches  
*Material:* Indurated hardpan  
*Structure:* Massive  
*Consistence:* Extremely hard, extremely firm  
*Depth:* 33 to 60 inches  
*Texture:* Extremely gravelly sand  
*Structure:* Massive  
*Consistence:* Extremely hard, extremely firm  
*Reaction:* Strongly alkaline  
*Salinity:* 4 to 16 millimhos per centimeter  
*Sodicity (SAR):* 5 to 13

### **Soil and Water Features**

*Depth to the hardpan:* 10 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 1.2 to 2.3 inches  
*Water-supplying capacity:* 5 inches

*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.20; T value—1; wind erodibility group—4  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

### **Characteristics of the Laxal Soil, Occasionally Flooded**

*Classification:* Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic  
*Positions on landscape:* Inset fans  
*Parent material:* Alluvium derived from shale and volcanic rock  
*Slope:* 2 to 4 percent  
*Elevation:* 5,600 to 5,900 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 50 degrees F  
*Frost-free season:* About 130 days  
*Dominant present vegetation:* Shadscale, Bailey greasewood, galleta

### **Typical Profile**

*Depth:* 0 to 10 inches  
*Texture:* Gravelly fine sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5  
*Depth:* 10 to 60 inches  
*Texture:* Stratified very gravelly sandy loam to very gravelly loamy coarse sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* Occasional for very brief periods in July through September  
*Permeability:* Moderately rapid  
*Available water capacity:* 3.9 to 5.3 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Medium  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.28; T value—5; wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Entic Durorthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Fan piedmont remnants

*Distinctive present vegetation:* Black sagebrush, shadscale, bottlebrush squirreltail

#### **Inclusion 2**

*Classification:* Xeric Torriorthents, sandy-skeletal, mixed (calcareous), mesic

*Positions on landscape:* Adjacent to channels in the higher areas of the unit

*Distinctive present vegetation:* Black sagebrush, spiny hopsage, bottlebrush squirreltail

#### **Inclusion 3**

*Classification:* Durorthidic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic

*Positions on landscape:* Adjacent to channels in the lower areas of the unit

*Distinctive present vegetation:* Basin big sagebrush, rubber rabbitbrush, basin wildrye

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Laxal Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Tomel Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

#### **Laxal Soil, Occasionally Flooded**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

### **Suitability and Limitations for Selected Uses**

#### **Laxal Soil**

*Range seeding:* Poor—too arid, excess salt

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—flooding

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage, excess salt

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Tomel Soil**

*Range seeding:* Poor—too arid, droughty

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—cemented pan, too sandy, small stones

*Daily cover for landfill:* Poor—cemented pan, seepage, too sandy

*Shallow excavations:* Severe—cemented pan, cutbanks cave

*Local roads and streets:* Severe—cemented pan

*Pond reservoir areas:* Severe—seepage, cemented pan

*Embankments, dikes, and levees:* Severe—seepage, excess salt

*Sand:* Probable source

*Gravel:* Probable source

### **Laxal Soil, Occasionally Flooded**

*Range seeding:* Poor—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Severe—flooding

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

### **Restrictive Features for Selected Practices**

#### **Laxal Soil**

*Drainage:* Deep to water

*Irrigation:* Droughty, slope, excess salt

*Terraces and diversions:* Too sandy

#### **Laxal Soil, Occasionally Flooded**

*Drainage:* Deep to water

*Irrigation:* Droughty, flooding, slope

*Terraces and diversions:* Too sandy

### **Interpretive Groups**

*Land capability classification:* Laxal soil—IVs, irrigated, and VIIs, nonirrigated; Tomel soil—VIIs, nonirrigated; Laxal soil, occasionally flooded—IIIw, irrigated, and VIIw, nonirrigated

*Range site:* Laxal and Tomel soils—029X017N;

Inclusion 1—024X003N; Inclusion 2—029X008N;

Inclusion 3—029X009N

### **220—Blackhawk very fine sandy loam, 2 to 8 percent slopes**

*Positions on landscape:* Fan piedmonts, fan skirts

### **Composition**

*Major component:*

Blackhawk very fine sandy loam, 2 to 8 percent slopes—85 percent

**Contrasting inclusions:**

Durorthidic Xeric Torrifluvents, sandy-skeletal, mixed (calcareous), mesic, 2 to 8 percent slopes—10 percent

Broyles very fine sandy loam, moderately saline, 2 to 8 percent slopes—3 percent

Orovada fine sandy loam, 2 to 8 percent slopes—2 percent

**Characteristics of the Blackhawk Soil**

**Classification:** Entic Durorthids, loamy, mixed, mesic, shallow

**Positions on landscape:** Fan piedmont remnants

**Parent material:** Loess over mixed alluvium

**Slope:** 2 to 8 percent

**Elevation:** 4,800 to 5,200 feet

**Average annual precipitation:** About 7 inches

**Average annual air temperature:** About 47 degrees F

**Frost-free season:** About 110 days

**Dominant present vegetation:** Shadscale, bud sagebrush, bottlebrush squirreltail

**Typical Profile**

**Depth:** 0 to 8 inches

**Texture:** Very fine sandy loam

**Structure:** Platy

**Consistence:** Soft, very friable

**Reaction:** Moderately alkaline

**Salinity:** 0 to 2 millimhos per centimeter

**Sodicity (SAR):** 0 to 2

**Depth:** 8 to 14 inches

**Texture:** Loam

**Structure:** Subangular blocky

**Consistence:** Slightly hard, very friable

**Reaction:** Strongly alkaline

**Salinity:** 0 to 2 millimhos per centimeter

**Sodicity (SAR):** 0 to 2

**Depth:** 14 to 17 inches

**Material:** Cemented hardpan

**Structure:** Massive

**Consistence:** Extremely hard, extremely firm

**Depth:** 17 to 38 inches

**Texture:** Loam

**Structure:** Massive

**Consistence:** Slightly hard, very friable

**Reaction:** Very strongly alkaline

**Salinity:** 16 to 30 millimhos per centimeter

**Sodicity (SAR):** 5 to 13

**Depth:** 38 to 60

**Texture:** Stratified very gravelly sandy loam to extremely gravelly coarse sand

**Structure:** Massive

**Consistence:** Slightly hard, very friable

**Reaction:** Moderately alkaline

**Salinity:** 8 to 16 millimhos per centimeter

**Sodicity (SAR):** 5 to 13

**Soil and Water Features**

**Depth to the hardpan:** 14 to 20 inches

**Depth to a seasonal high water table:** More than 60 inches

**Frequency of flooding:** None

**Permeability:** Moderate

**Available water capacity:** 2.2 to 2.7 inches

**Water-supplying capacity:** 7 inches

**Runoff:** Medium

**Hydrologic group:** D

**Erosion factors (upper layer):** K value—0.43; T value—1; wind erodibility group—3

**Hazard of erosion:** By water—slight; by wind—severe

**Shrink-swell potential:** Low

**Corrosivity:** To steel—high; to concrete—low

**Potential for frost action:** Low

**Contrasting Inclusions****Inclusion 1**

**Classification:** Durorthidic Xeric Torrifluvents, sandy-skeletal, mixed (calcareous), mesic

**Positions on landscape:** Narrow inset fans, areas adjacent to channels

**Distinctive present vegetation:** Basin big sagebrush, basin wildrye, rubber rabbitbrush

**Inclusion 2**

**Classification:** Duric Camborthids, coarse-loamy, mixed, mesic

**Positions on landscape:** Dissected fan skirts

**Distinctive present vegetation:** Shadscale, bud sagebrush

**Inclusion 3**

**Classification:** Durixerollic Camborthids, coarse-loamy, mixed, mesic

**Positions on landscape:** Broad inset fans

**Dominant present vegetation:** Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Wild herbaceous plants (nonirrigated):** Poor

**Shrubs (nonirrigated):** Poor

**Suitability and Limitations for Selected Uses**

**Range seeding:** Poor—too arid, droughty

**Roadfill:** Good

**Topsoil:** Poor—cemented pan, area reclaim

**Daily cover for landfill:** Poor—cemented pan

*Shallow excavations:* Severe—cemented pan, cutbanks cave

*Local roads and streets:* Moderate—cemented pan

*Pond reservoir areas:* Severe—seepage, cemented pan

*Embankments, dikes, and levees:* Severe—seepage, excess salt

*Sand:* Probable source

*Gravel:* Probable source

### **Interpretive Groups**

*Land capability classification:* Blackhawk soil—IVe, irrigated, and VIIs, nonirrigated

*Range site:* Blackhawk soil—024X002N; Inclusion 1—028B009N; Inclusion 2—024X020N; Inclusion 3—024X003N

## **221—Blackhawk-Tenabo-Desatoya Variant association**

*Positions on landscape:* Fan piedmonts

### **Composition**

*Major components:*

Blackhawk very fine sandy loam, 8 to 15 percent slopes—40 percent

Tenabo very fine sandy loam, 2 to 4 percent slopes—25 percent

Desatoya Variant very gravelly sandy loam, 15 to 30 percent slopes—20 percent

*Contrasting inclusions:*

Grassval gravelly loam, 2 to 4 percent slopes—6 percent

Durixerollic Haplargids, loamy-skeletal, mixed, mesic, 15 to 50 percent slopes—5 percent

Durixerollic Camborthids, coarse-loamy, mixed, mesic, 2 to 8 percent slopes—4 percent

### **Characteristics of the Blackhawk Soil**

*Classification:* Entic Durorthids, loamy, mixed, mesic, shallow

*Positions on landscape:* Shoulder slopes of fan piedmont remnants

*Parent material:* Loess over mixed alluvium

*Slope:* 8 to 15 percent

*Elevation:* 5,600 to 5,800 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

### **Typical Profile**

*Depth:* 0 to 8 inches

*Texture:* Very fine sandy loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 8 to 14 inches

*Texture:* Loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 14 to 17 inches

*Material:* Cemented hardpan

*Structure:* Massive

*Consistence:* Extremely hard, extremely firm

*Depth:* 17 to 38 inches

*Texture:* Loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Very strongly alkaline

*Salinity:* 16 to 25 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

*Depth:* 38 to 60

*Texture:* Stratified very gravelly sandy loam to extremely gravelly coarse sand

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

### **Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 2.2 to 2.7 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.43; T value—1; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Tenabo Soil**

*Classification:* Typic Nadurargids, loamy, mixed, mesic, shallow

*Positions on landscape:* Summits of fan piedmont remnants



*Parent material:* Thin loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 5,500 to 5,600 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass

#### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Very fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 5 to 10

*Depth:* 4 to 15 inches

*Texture:* Clay loam, gravelly clay loam, silty clay loam

*Structure:* Prismatic

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

*Depth:* 15 to 28 inches

*Material:* Indurated hardpan

*Structure:* Platy

*Consistence:* Extremely hard, extremely firm

*Depth:* 28 to 60 inches

*Texture:* Stratified very gravelly sandy loam to extremely gravelly coarse sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Strongly alkaline

*Salinity:* 4 to 16 millimhos per centimeter

*Sodicity (SAR):* 25 to 40

#### **Soil and Water Features**

*Depth to the hardpan:* 9 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 2.8 to 3.2 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.55; T value—1; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—moderate

*Potential for frost action:* Low

#### **Characteristics of the Desatoya Variant Soil**

*Classification:* Xerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* South-facing side slopes of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 15 to 30 percent

*Elevation:* 5,600 to 5,800 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bottlebrush squirreltail, bluegrass, Indian ricegrass, black sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 5 percent cobbles, 45 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Very gravelly sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 3 to 13 inches

*Texture:* Gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 13 to 26 inches

*Texture:* Very gravelly sandy loam

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 26 to 60 inches

*Texture:* Very gravelly sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate over rapid  
*Available water capacity:* 2.8 to 4.4 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Rapid  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.10; T value—5;  
 wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Xerollic Durargids, loamy, mixed, mesic, shallow  
*Positions on landscape:* The higher summits of fan piedmont remnants  
*Distinctive present vegetation:* Black sagebrush, bottlebrush squirreltail

#### **Inclusion 2**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* East-, west-, and north-facing side slopes of fan piedmont remnants  
*Distinctive present vegetation:* Shadscale, Wyoming big sagebrush, bottlebrush squirreltail

#### **Inclusion 3**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Inset fans  
*Dominant present vegetation:* Wyoming big sagebrush, pine bluegrass, needleandthread

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Blackhawk Soil**

*Wild herbaceous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Poor

#### **Tenabo Soil**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor

#### **Desatoya Variant Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Blackhawk Soil**

*Range seeding:* Poor—too arid, droughty  
*Roadfill:* Good  
*Topsoil:* Poor—cemented pan, area reclaim

*Daily cover for landfill:* Poor—cemented pan  
*Shallow excavations:* Severe—cemented pan, cutbanks cave  
*Local roads and streets:* Moderate—cemented pan, slope  
*Pond reservoir areas:* Severe—seepage, cemented pan, slope  
*Embankments, dikes, and levees:* Severe—seepage, excess salt  
*Sand:* Probable source  
*Gravel:* Probable source

#### **Tenabo Soil**

*Range seeding:* Poor—too arid, droughty, excess sodium  
*Roadfill:* Poor—cemented pan  
*Topsoil:* Poor—cemented pan, small stones, too sandy  
*Daily cover for landfill:* Poor—cemented pan, seepage, too sandy  
*Shallow excavations:* Severe—cemented pan, cutbanks cave  
*Local roads and streets:* Severe—cemented pan  
*Pond reservoir areas:* Severe—seepage, cemented pan  
*Embankments, dikes, and levees:* Severe—seepage, excess sodium, excess salt  
*Sand:* Probable source  
*Gravel:* Probable source

#### **Desatoya Variant Soil**

*Range seeding:* Poor—small stones  
*Roadfill:* Fair—slope  
*Topsoil:* Poor—small stones, area reclaim, slope  
*Daily cover for landfill:* Poor—seepage, too sandy, small stones  
*Shallow excavations:* Severe—cutbanks cave, slope  
*Local roads and streets:* Severe—slope  
*Pond reservoir areas:* Severe—seepage, slope  
*Embankments, dikes, and levees:* Severe—seepage  
*Sand:* Probable source  
*Gravel:* Probable source

### **Interpretive Groups**

*Land capability classification:* Blackhawk and Tenabo soils—IVe, irrigated, and VIIs, nonirrigated; Desatoya Variant soil—VIIs, nonirrigated  
*Range site:* Blackhawk and Tenabo soils—024X002N; Desatoya Variant soil—024X030N; Inclusion 1—024X030N; Inclusion 2—024X045N; Inclusion 3—027X008N

### **231—Broyles very fine sandy loam, 2 to 4 percent slopes**

*Positions on landscape:* Fan skirts

### **Composition**

#### *Major component:*

Broyles very fine sandy loam, 2 to 4 percent slopes—85 percent

#### *Contrasting inclusions:*

Entic Durorthids, coarse-loamy, mixed, mesic, 2 to 4 percent slopes—5 percent

Creemon silt loam, 2 to 4 percent slopes—5 percent

Orovada fine sandy loam, 2 to 4 percent slopes—5 percent

### **Characteristics of the Broyles Soil**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Fan skirts

*Parent material:* Thin loess mantle over mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 5,100 to 5,600 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bluegrass

#### **Typical Profile**

*Depth:* 0 to 11 inches

*Texture:* Very fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

*Depth:* 11 to 60 inches

*Texture:* Stratified loam to gravelly loamy sand

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately rapid

*Available water capacity:* 6.2 to 7.5 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—moderate

*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Entic Durorthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Adjoining fan piedmont remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

#### **Inclusion 2**

*Classification:* Duric Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* The lower fan skirt margins near old channels

*Distinctive present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

#### **Inclusion 3**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

### **Suitability and Limitations for Selected Uses**

*Range seeding:* Poor—too arid, excess salt

*Roadfill:* Good

*Topsoil:* Poor—small stones

*Daily cover for landfill:* Fair—too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Broyles soil—Ile, irrigated, and VIIc, nonirrigated

*Range site:* Broyles soil—024X002N; Inclusions 1 and 2—024X002N; Inclusion 3—024X020N

## **235—Broyles-Creemon association**

*Positions on landscape:* Fan skirts

### **Composition**

#### *Major components:*

Broyles silt loam, 0 to 2 percent slopes—45 percent  
Creemon silt loam, 0 to 2 percent slopes—40 percent

#### *Contrasting inclusions:*

Bubus very fine sandy loam, 0 to 2 percent slopes—7 percent

Beoska silt loam, 0 to 2 percent slopes—6 percent  
Xerollic Camborthids, loamy-skeletal, mixed, mesic, 0 to 2 percent slopes—2 percent

### **Characteristics of the Broyles Soil**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* The higher fan skirts

*Parent material:* Thin loess mantle over mixed alluvium

*Slope:* 0 to 2 percent

*Elevation:* 5,100 to 5,800 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bluegrass

#### **Typical Profile**

*Depth:* 0 to 11 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 11 to 60 inches

*Texture:* Stratified loam to gravelly loamy sand

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately rapid

*Available water capacity:* 6.2 to 7.5 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—moderate

*Potential for frost action:* Low

### **Characteristics of the Creemon Soil**

*Classification:* Duric Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* The lower fan skirts

*Parent material:* Mixed silty alluvium that includes volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 5,100 to 5,800 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass

#### **Typical Profile**

*Depth:* 0 to 7 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 7 to 18 inches

*Texture:* Silt loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

*Depth:* 18 to 60 inches

*Texture:* Stratified very fine sandy loam to silt loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 10 to 12 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic

*Positions on landscape:* The lower channeled margins of adjacent alluvial flats

*Distinctive present vegetation:* Shadscale, black greasewood, bottlebrush squirreltail

#### **Inclusion 2**

*Classification:* Duric Natrargids, fine-loamy, mixed, mesic

*Positions on landscape:* Adjacent to the lower fan piedmont remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

#### **Inclusion 3**

*Classification:* Xerollic Camborthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Wyoming big sagebrush, spiny hopsage, Indian ricegrass

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Broyles Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Creemon Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

### **Suitability and Limitations for Selected Uses**

#### **Broyles Soil**

*Range seeding:* Poor—too arid, excess salt

*Roadfill:* Good

*Topsoil:* Poor—small stones

*Daily cover for landfill:* Fair—too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Creemon Soil**

*Range seeding:* Poor—too arid, excess salt

*Roadfill:* Good

*Topsoil:* Poor—thin layer

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Slight

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping, excess salt

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Restrictive Features for Selected Practices**

#### **Creemon Soil**

*Drainage:* Deep to water

*Irrigation:* Erodes easily, excess salt

*Terraces and diversions:* Erodes easily

### **Interpretive Groups**

*Land capability classification:* Broyles soil—IIs, irrigated, and VIIc, nonirrigated; Creemon soil—IIc, irrigated, and VIIc, nonirrigated

*Range site:* Broyles and Creemon soils—024X002N; Inclusion 1—024X003N; Inclusion 2—024X002N; Inclusion 3—024X020N

## **236—Broyles association**

*Positions on landscape:* Fan skirts

### **Composition**

*Major components:*

Broyles very fine sandy loam, 2 to 8 percent slopes—45 percent

Broyles very fine sandy loam, moderately saline, 2 to 4 percent slopes—40 percent

*Contrasting inclusions:*

Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic, 2 to 8 percent slopes—5 percent

Creemon very fine sandy loam, 2 to 8 percent slopes—5 percent

Orovida fine sandy loam, 2 to 8 percent slopes—5 percent

### **Characteristics of the Broyles Soil**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Fan skirts

*Parent material:* Thin loess mantle over mixed alluvium

*Slope:* 2 to 8 percent

*Elevation:* 5,100 to 5,600 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bluegrass

### **Typical Profile**

*Depth:* 0 to 13 inches

*Texture:* Very fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 2 to 10

*Depth:* 13 to 60 inches  
*Texture:* Stratified loam to gravelly loamy sand  
*Structure:* Massive  
*Consistence:* Hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately rapid  
*Available water capacity:* 6.2 to 7.5 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—moderate  
*Potential for frost action:* Low

#### **Characteristics of the Broyles Soil, Moderately Saline**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* The lower fan skirt margins near alluvial flats  
*Parent material:* Thin loess mantle over mixed alluvium  
*Slope:* 2 to 4 percent  
*Elevation:* 5,100 to 5,600 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Shadscale, black greasewood, Indian ricegrass, bluegrass

#### **Typical Profile**

*Depth:* 0 to 5 inches  
*Texture:* Very fine sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 10 to 20  
*Depth:* 5 to 11 inches  
*Texture:* Silt loam, very fine sandy loam

*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 10 to 20  
*Depth:* 11 to 60 inches  
*Texture:* Stratified loam to gravelly loamy sand  
*Structure:* Massive  
*Consistence:* Hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 4 to 16 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately rapid  
*Available water capacity:* 6.1 to 7.5 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.49; T value—5; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—moderate  
*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic  
*Positions on landscape:* Inset fans on the lower part of fan skirts  
*Distinctive present vegetation:* Wyoming big sagebrush, black greasewood, basin wildrye

##### **Inclusion 2**

*Classification:* Duric Camborthids, coarse-silty, mixed, mesic  
*Positions on landscape:* Convex, lower fan skirt margins  
*Distinctive present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

##### **Inclusion 3**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Inset fans on the upper part of fan skirts  
*Distinctive present vegetation:* Wyoming big sagebrush, spiny hopsage, Indian ricegrass

#### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Broyles Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Broyles Soil, Moderately Saline**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

### **Suitability and Limitations for Selected Uses**

#### **Broyles Soil**

*Range seeding:* Poor—too arid, excess salt

*Roadfill:* Good

*Topsoil:* Poor—small stones

*Daily cover for landfill:* Fair—too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Broyles Soil, Moderately Saline**

*Range seeding:* Poor—too arid, excess salt

*Roadfill:* Good

*Topsoil:* Poor—small stones, excess salt

*Daily cover for landfill:* Fair—too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Broyles soil—IIIe, irrigated, and VIIc, nonirrigated; Broyles soil, moderately saline—IIIs, irrigated, and VIIs, nonirrigated

*Range site:* Broyles soil—024X002N; Broyles soil, moderately saline—024X003N; Inclusion 1—024X022N; Inclusion 2—024X002N; Inclusion 3—024X020N

## **237—Broyles-Beoska-Orovada association**

*Positions on landscape:* Fan piedmonts, fan skirts

### **Composition**

*Major components:*

Broyles very fine sandy loam, 2 to 4 percent slopes—40 percent

Beoska very fine sandy loam, 2 to 8 percent slopes—30 percent

Orovada fine sandy loam, 2 to 8 percent slopes—20 percent

*Contrasting inclusions:*

Durixerollic Camborthids, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—5 percent

Tenabo very fine sandy loam, 2 to 8 percent slopes—5 percent

### **Characteristics of the Broyles Soil**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Fan skirts

*Parent material:* Thin loess mantle over mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 5,100 to 6,000 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bluegrass

### **Typical Profile**

*Depth:* 0 to 11 inches

*Texture:* Very fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

*Depth:* 11 to 60 inches

*Texture:* Stratified loam to gravelly loamy sand

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately rapid

*Available water capacity:* 6.2 to 7.5 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—moderate

*Potential for frost action:* Low

### **Characteristics of the Beoska Soil**

*Classification:* Duric Natrargids, fine-loamy, mixed, mesic

*Positions on landscape:* Fan piedmont remnants

*Parent material:* Loess over loamy and gravelly mixed alluvium

*Slope:* 2 to 8 percent

*Elevation:* 5,100 to 6,000 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bottlebrush squirreltail

#### **Typical Profile**

*Depth:* 0 to 13 inches

*Texture:* Very fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 13 to 24 inches

*Texture:* Silty clay loam, silt loam

*Structure:* Prismatic

*Consistence:* Hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

*Depth:* 24 to 55 inches

*Texture:* Gravelly very fine sandy loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

*Depth:* 55 to 60 inches

*Texture:* Very gravelly fine sandy loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 7.8 to 9.7 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.49; T value—5; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

#### **Characteristics of the Orovada Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Inset fans

*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 2 to 8 percent

*Elevation:* 5,100 to 6,000 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

#### **Typical Profile**

*Depth:* 0 to 8 inches

*Texture:* Fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 8 to 20 inches

*Texture:* Fine sandy loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 20 to 60 inches

*Texture:* Stratified fine sandy loam to silt loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 8.4 to 9.6 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate



### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durixerollic Camborthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Adjacent to channels

*Distinctive present vegetation:* Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail

#### **Inclusion 2**

*Classification:* Typic Nadurargids, loamy, mixed, mesic, shallow

*Positions on landscape:* The higher fan piedmont remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Broyles Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Beoska Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Orovada Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Broyles Soil**

*Range seeding:* Poor—too arid, excess salt

*Roadfill:* Good

*Topsoil:* Poor—small stones

*Daily cover for landfill:* Fair—too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Beoska Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim, excess salt

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Slight

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Orovada Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Fair—small stones, thin layer

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Broyles soil—IIe, irrigated, and VIIC, nonirrigated; Beoska soil—IIIe, irrigated, and VIIc, nonirrigated; Orovada soil—IIe, irrigated, and VIc, nonirrigated

*Range site:* Broyles and Beoska soils—024X002N; Orovada soil—028B010N; Inclusion 1—024X020N; Inclusion 2—024X002N

## **239—Broyles-Tessfive-Perlor association**

*Positions on landscape:* Low, rolling hills

### **Composition**

*Major components:*

Broyles very fine sandy loam, 4 to 8 percent slopes—40 percent

Tessfive gravelly loam, 2 to 8 percent slopes—25 percent

Perlor fine sandy loam, 8 to 15 percent slopes—20 percent

*Contrasting inclusions:*

Duric Camborthids, coarse-loamy, mixed, mesic, 4 to 8 percent slopes—7 percent

Puett fine sandy loam, 15 to 30 percent slopes—6 percent

Orovada fine sandy loam, 0 to 2 percent slopes—2 percent

### **Characteristics of the Broyles Soil**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Inset fans between hills

*Parent material:* Thin loess mantle over mixed alluvium

*Slope:* 4 to 8 percent

*Elevation:* 5,700 to 5,900 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bluegrass

**Typical Profile***Depth:* 0 to 13 inches*Texture:* Very fine sandy loam*Structure:* Platy*Consistence:* Slightly hard, very friable*Reaction:* Moderately alkaline*Salinity:* 2 to 4 millimhos per centimeter*Sodicity (SAR):* 2 to 10*Depth:* 13 to 60 inches*Texture:* Stratified loam to gravelly loamy sand*Structure:* Massive*Consistence:* Hard, friable*Reaction:* Strongly alkaline*Salinity:* 8 to 16 millimhos per centimeter*Sodicity (SAR):* 25 to 46**Soil and Water Features***Depth to a seasonal high water table:* More than 60 inches*Frequency of flooding:* None*Permeability:* Moderately rapid*Available water capacity:* 6.2 to 7.5 inches*Water-supplying capacity:* 7 inches*Runoff:* Slow*Hydrologic group:* B*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—3*Hazard of erosion:* By water—slight; by wind—severe*Shrink-swell potential:* Low*Corrosivity:* To steel—high; to concrete—moderate*Potential for frost action:* Low**Characteristics of the Tessfive Soil***Classification:* Lithic Xeric Torriorthents, loamy, mixed (calcareous), mesic*Positions on landscape:* Crests and shoulder slopes of rolling hills*Parent material:* Residuum that is derived from tuffaceous sediment and includes loess*Slope:* 2 to 8 percent*Elevation:* 5,700 to 5,900 feet*Average annual precipitation:* About 8 inches*Average annual air temperature:* About 49 degrees F*Frost-free season:* About 120 days*Dominant present vegetation:* Indian ricegrass, bluegrass, black sagebrush**Typical Profile***Rock fragments on surface:* 35 percent pebbles*Depth:* 0 to 6 inches*Texture:* Gravelly loam*Structure:* Platy*Consistence:* Soft, very friable*Reaction:* Moderately alkaline*Salinity:* 0 to 2 millimhos per centimeter*Depth:* 6 to 16 inches*Texture:* Gravelly loam*Structure:* Subangular blocky*Consistence:* Slightly hard, friable*Reaction:* Moderately alkaline*Salinity:* 0 to 2 millimhos per centimeter*Depth:* 16 inches*Material:* Unweathered bedrock**Soil and Water Features***Depth to bedrock:* 10 to 20 inches*Depth to a seasonal high water table:* More than 60 inches*Frequency of flooding:* None*Permeability:* Moderate*Available water capacity:* 1.8 to 2.4 inches*Water-supplying capacity:* 8 inches*Runoff:* Medium*Hydrologic group:* D*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—5*Hazard of erosion:* By water—slight; by wind—slight*Shrink-swell potential:* Low*Corrosivity:* To steel—high; to concrete—low*Potential for frost action:* Moderate**Characteristics of the Perlor Soil***Classification:* Typic Torriorthents, loamy, mixed (calcareous), mesic, shallow*Positions on landscape:* Side slopes of rolling hills*Parent material:* Loess-capped residuum derived from tuffaceous sediment*Slope:* 8 to 15 percent*Elevation:* 5,700 to 5,900 feet*Average annual precipitation:* About 7 inches*Average annual air temperature:* About 47 degrees F*Frost-free season:* About 120 days*Dominant present vegetation:* Indian ricegrass, bluegrass, shadscale, bud sagebrush**Typical Profile***Rock fragments on surface:* 10 percent pebbles*Depth:* 0 to 7 inches*Texture:* Fine sandy loam*Structure:* Platy*Consistence:* Slightly hard, friable*Reaction:* Moderately alkaline*Salinity:* 0 to 2 millimhos per centimeter*Depth:* 7 to 14 inches*Texture:* Loam, sandy loam, gravelly sandy loam*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 2 to 10

*Depth:* 14 inches  
*Material:* Weathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 14 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 1.6 to 2.2 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.32; T value—1; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Inset fans dissecting low hills  
*Distinctive present vegetation:* Shadscale, black greasewood, bottlebrush squirreltail

##### **Inclusion 2**

*Classification:* Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow  
*Positions on landscape:* Eroded escarpments of hills  
*Distinctive present vegetation:* Black sagebrush, bluegrass, small rabbitbrush, Wyoming big sagebrush

##### **Inclusion 3**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Adjacent to channels  
*Distinctive present vegetation:* Wyoming big sagebrush, spiny hopsage, Indian ricegrass

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Broyles Soil**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor

##### **Tessfive Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

##### **Perlor Soil**

*Wild herbaceous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Poor

#### **Suitability and Limitations for Selected Uses**

##### **Broyles Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium  
*Roadfill:* Good

*Topsoil:* Poor—small stones  
*Daily cover for landfill:* Fair—too sandy, small stones  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Slight  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—piping  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

##### **Tessfive Soil**

*Range seeding:* Poor—droughty  
*Roadfill:* Poor—depth to rock  
*Topsoil:* Poor—depth to rock, small stones  
*Daily cover for landfill:* Poor—depth to rock, small stones  
*Shallow excavations:* Severe—depth to rock  
*Local roads and streets:* Moderate—depth to rock, frost action  
*Pond reservoir areas:* Severe—depth to rock  
*Embankments, dikes, and levees:* Severe—thin layer  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

##### **Perlor Soil**

*Range seeding:* Poor—too arid, droughty  
*Roadfill:* Poor—depth to rock  
*Topsoil:* Poor—depth to rock, small stones  
*Daily cover for landfill:* Poor—depth to rock  
*Shallow excavations:* Severe—depth to rock  
*Local roads and streets:* Moderate—depth to rock, slope  
*Pond reservoir areas:* Severe—depth to rock, slope  
*Embankments, dikes, and levees:* Severe—piping  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Broyles soil—IIIe, irrigated, and VIIc, nonirrigated; Tessfive and Perlor soils—VIIIs, nonirrigated

*Range site:* Broyles soil—024X002N; Tessfive soil—024X030N; Perlor soil—024X002N; Inclusion 1—024X003N; Inclusion 2—025X025N; Inclusion 3—024X020N

**249—Bubus association***Positions on landscape:* Basin floors**Composition***Major components:*

Bubus very fine sandy loam, slightly saline, 2 to 4 percent slopes—65 percent

Bubus very fine sandy loam, 0 to 2 percent slopes—20 percent

*Contrasting inclusions:*

Typic Torriorthents, sandy-skeletal, mixed, mesic, 0 to 4 percent slopes—7 percent

Batan silt loam, 0 to 2 percent slopes—5 percent

Playas—3 percent

**Characteristics of the Bubus Soil, Slightly Saline***Classification:* Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic*Positions on landscape:* Convex, higher lake plain terraces*Parent material:* Mixed alluvium that is high in content of pyroclastic material*Slope:* 2 to 4 percent*Elevation:* 5,800 to 6,300 feet*Average annual precipitation:* About 7 inches*Average annual air temperature:* About 49 degrees F*Frost-free season:* About 120 days*Dominant present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail**Typical Profile***Depth:* 0 to 6 inches*Texture:* Very fine sandy loam*Structure:* Platy*Consistence:* Slightly hard, very friable*Reaction:* Moderately alkaline*Salinity:* 4 to 8 millimhos per centimeter*Sodicity (SAR):* 5 to 13*Depth:* 6 to 60 inches*Texture:* Stratified sandy loam to silt loam*Structure:* Massive*Consistence:* Slightly hard, very friable*Reaction:* Strongly alkaline*Salinity:* 16 to 30 millimhos per centimeter*Sodicity (SAR):* 25 to 46**Soil and Water Features***Depth to a seasonal high water table:* More than 60 inches*Frequency of flooding:* None*Permeability:* Moderate*Available water capacity:* 9 to 10 inches*Water-supplying capacity:* 7 inches*Runoff:* Slow*Hydrologic group:* B*Erosion factors (upper layer):* K value—0.49; T value—5; wind erodibility group—3*Hazard of erosion:* By water—slight; by wind—severe*Shrink-swell potential:* Low*Corrosivity:* To steel—high; to concrete—high*Potential for frost action:* Low**Characteristics of the Bubus Soil***Classification:* Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic*Positions on landscape:* Concave, lower lake plain terraces*Parent material:* Mixed alluvium that is high in content of pyroclastic material*Slope:* 0 to 2 percent*Elevation:* 5,800 to 6,200 feet*Average annual precipitation:* About 7 inches*Average annual air temperature:* About 49 degrees F*Frost-free season:* About 120 days*Dominant present vegetation:* Shadscale, black greasewood, bottlebrush squirreltail**Typical Profile***Depth:* 0 to 6 inches*Texture:* Very fine sandy loam*Structure:* Platy*Consistence:* Slightly hard, very friable*Reaction:* Moderately alkaline*Salinity:* 8 to 16 millimhos per centimeter*Sodicity (SAR):* 5 to 13*Depth:* 6 to 60 inches*Texture:* Stratified sandy loam to silt loam*Structure:* Massive*Consistence:* Slightly hard, very friable*Reaction:* Strongly alkaline*Salinity:* 16 to 30 millimhos per centimeter*Sodicity (SAR):* 46 to 60**Soil and Water Features***Depth to a seasonal high water table:* More than 60 inches*Frequency of flooding:* None*Permeability:* Moderate*Available water capacity:* 9 to 10 inches*Water-supplying capacity:* 7 inches*Runoff:* Slow*Hydrologic group:* B*Erosion factors (upper layer):* K value—0.49; T value—5; wind erodibility group—3*Hazard of erosion:* By water—slight; by wind—severe*Shrink-swell potential:* Low*Corrosivity:* To steel—high; to concrete—high*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Typic Torriorthents, sandy-skeletal, mixed, mesic

*Positions on landscape:* Offshore bars

*Distinctive present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

#### **Inclusion 2**

*Classification:* Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Alluvial flats adjacent to areas of Playas

*Distinctive present vegetation:* Shadscale, black greasewood, bud sagebrush, bottlebrush squirreltail

#### **Inclusion 3**

*Positions on landscape:* Irregularly shaped sink areas

*Distinctive present vegetation:* None

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Bubus Soil, Slightly Saline**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Bubus Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

### **Suitability and Limitations for Selected Uses**

#### **Bubus Soil, Slightly Saline**

*Range seeding:* Poor—too arid, excess salt, excess sodium

*Roadfill:* Good

*Topsoil:* Poor—excess salt

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Slight

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—piping, excess salt

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Bubus Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium

*Roadfill:* Good

*Topsoil:* Poor—excess salt

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Slight

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping, excess salt

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Bubus soil, slightly saline—IIC, irrigated, and VIIc, nonirrigated; Bubus soil—VIIc, nonirrigated

*Range site:* Bubus soil, slightly saline—024X002N; Bubus soil—024X003N; Inclusion 1—024X002N; Inclusion 2—024X003N; Inclusion 3—none

## **260—Umbertland-Wendane association**

*Positions on landscape:* Lake plains, alluvial flats

### **Composition**

*Major components:*

Umbertland silt loam, 0 to 2 percent slopes—50 percent  
Wendane silt loam, frequently flooded, 0 to 2 percent slopes—40 percent

*Contrasting inclusions:*

Wendane silt loam, occasionally flooded, 0 to 2 percent slopes—7 percent

Wendane silt loam, strongly sodic, 0 to 2 percent slopes—3 percent

### **Characteristics of the Umbertland Soil**

*Classification:* Aeric Halaquepts, fine, montmorillonitic (calcareous), mesic

*Positions on landscape:* Smooth lake plains

*Parent material:* Silty lacustrine sediment derived from various kinds of rock

*Slope:* 0 to 2 percent

*Elevation:* 5,500 to 5,700 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 130 days

*Dominant present vegetation:* Black greasewood, rubber rabbitbrush, alkali sacaton, sickle saltbush

### **Typical Profile**

*Depth:* 0 to 11 inches

*Texture:* Silt loam

*Structure:* Granular

*Consistence:* Slightly hard, friable

*Reaction:* Very strongly alkaline

*Salinity:* 25 to 40 millimhos per centimeter

*Sodicity (SAR):* 60 to 80

*Depth:* 11 to 60 inches

*Texture:* Clay, silty clay, silty clay loam

*Structure:* Angular blocky

*Consistence:* Hard, firm

*Reaction:* Very strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

#### **Soil and Water Features**

*Depth to a seasonal high water table:* 30 to 60 inches

*Frequency of flooding:* Rare

*Permeability:* Very slow

*Available water capacity:* 9.1 to 12.0 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Very slow

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—4L

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* High

#### **Characteristics of the Wendane Soil**

*Classification:* Aeris Halaquepts, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Alluvial flats

*Parent material:* Silty alluvium derived from volcanic rock, tuff, loess, and volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 5,500 to 5,700 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Black greasewood, basin wildrye

#### **Typical Profile**

*Depth:* 0 to 7 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 30 to 50 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

*Depth:* 7 to 18 inches

*Texture:* Silt loam, very fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

*Depth:* 18 to 60 inches

*Texture:* Stratified silt loam to clay loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 25 to 35

#### **Soil and Water Features**

*Depth to a seasonal high water table:* 30 to 48 inches

*Frequency of flooding:* Frequent for brief to long periods in February through June

*Permeability:* Moderately slow

*Available water capacity:* 11 to 12 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Very slow

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—4L

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* High

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Aeris Halaquepts, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Slightly dissected, convex alluvial flats

*Distinctive present vegetation:* Black greasewood, inland saltgrass

##### **Inclusion 2**

*Classification:* Aeris Halaquepts, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Concave, narrow, linear areas bordering recent channels

*Distinctive present vegetation:* Silver buffaloberry, Torrey quailbush, basin wildrye

#### **Major Uses**

*Current uses:* Livestock grazing, wildlife habitat

*Potential foreseeable use:* Irrigated pasture

#### **Suitability for Wildlife Habitat Elements**

##### **Umbriel Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

##### **Wendane Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Suitability and Limitations for Selected Uses**

##### **Umbriel Soil**

*Range seeding:* Poor—excess salt, excess sodium

*Roadfill:* Poor—low strength, shrink-swell

*Topsoil:* Poor—excess salt, excess sodium, too clayey

*Daily cover for landfill:* Poor—too clayey, hard to pack, excess salt

*Shallow excavations:* Moderate—too clayey, wetness

*Local roads and streets:* Severe—low strength, frost action, shrink-swell

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Wendane Soil**

*Range seeding:* Poor—excess salt, excess sodium

*Roadfill:* Poor—low strength

*Topsoil:* Poor—excess salt, excess sodium

*Daily cover for landfill:* Poor—excess salt, excess sodium

*Shallow excavations:* Moderate—wetness, flooding

*Local roads and streets:* Severe—flooding, frost action

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Restrictive Features for Selected Practices**

##### **Umbreland Soil**

*Drainage:* Percs slowly, frost action, excess salt

*Irrigation:* Wetness, percs slowly

*Terraces and diversions:* Erodes easily, wetness, percs slowly

#### **Interpretive Groups**

*Land capability classification:* Umbreland and Wendane soils—VIIw, nonirrigated

*Range site:* Umbreland soil—024X010N; Wendane soil—024X007N; Inclusion 1—024X011N; Inclusion 2—028B057N

### **261—Umbreland-Wendane-Ocala association**

*Positions on landscape:* Lake plains, alluvial flats

#### **Composition**

*Major components:*

Umbreland silt loam, 0 to 2 percent slopes—35 percent

Wendane silt loam, frequently flooded, 0 to 2 percent slopes—35 percent

Ocala silt loam, rarely flooded, 0 to 2 percent slopes—20 percent

*Contrasting inclusions:*

Wendane silt loam, strongly sodic, 0 to 2 percent slopes—6 percent

Playas—4 percent

### **Characteristics of the Umbreland Soil**

*Classification:* Aeric Halaquepts, fine, montmorillonitic (calcareous), mesic

*Positions on landscape:* Smooth lake plains

*Parent material:* Silty lacustrine sediment derived from various kinds of rock

*Slope:* 0 to 2 percent

*Elevation:* 5,500 to 5,700 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 130 days

*Dominant present vegetation:* Black greasewood, rubber rabbitbrush, alkali sacaton, sickle saltbush

#### **Typical Profile**

*Depth:* 0 to 7 inches

*Texture:* Silt loam

*Structure:* Granular

*Consistence:* Slightly hard, friable

*Reaction:* Very strongly alkaline

*Salinity:* 25 to 40 millimhos per centimeter

*Sodicity (SAR):* 60 to 80

*Depth:* 7 to 60 inches

*Texture:* Clay, silty clay, silty clay loam

*Structure:* Angular blocky

*Consistence:* Hard, firm

*Reaction:* Very strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

#### **Soil and Water Features**

*Depth to a seasonal high water table:* 30 to 60 inches

*Frequency of flooding:* Rare

*Permeability:* Very slow

*Available water capacity:* 9 to 12 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Pondered

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—4L

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* High

### **Characteristics of the Wendane Soil**

*Classification:* Aeric Halaquepts, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Alluvial flats

*Parent material:* Silty alluvium derived from volcanic rock, tuff, loess, and volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 5,500 to 5,700 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Black greasewood, basin wildrye, rubber rabbitbrush, Torrey quailbush

#### **Typical Profile**

*Depth:* 0 to 7 inches  
*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 30 to 50 millimhos per centimeter  
*Sodicity (SAR):* 13 to 25

*Depth:* 7 to 18 inches  
*Texture:* Silt loam, very fine sandy loam  
*Structure:* Subangular blocky  
*Consistence:* Soft, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 16 to 30 millimhos per centimeter  
*Sodicity (SAR):* 46 to 60

*Depth:* 18 to 60 inches  
*Texture:* Stratified silt loam to clay loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 16 to 30 millimhos per centimeter  
*Sodicity (SAR):* 25 to 35

#### **Soil and Water Features**

*Depth to a seasonal high water table:* 30 to 48 inches  
*Frequency of flooding:* Frequent for brief to long periods in February through June  
*Permeability:* Moderately slow  
*Available water capacity:* 11 to 12 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Very slow  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—4L  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* High

#### **Characteristics of the Ocala Soil**

*Classification:* Aerlic Halaquepts, fine-silty, mixed (calcareous), mesic  
*Positions on landscape:* Slightly dissected alluvial flats around small Playas  
*Parent material:* Mixed silty alluvium that includes volcanic ash  
*Slope:* 0 to 2 percent  
*Elevation:* 5,500 to 5,700 feet  
*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Black greasewood, rubber rabbitbrush, basin wildrye

#### **Typical Profile**

*Depth:* 0 to 4 inches  
*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Slightly hard, friable  
*Reaction:* Very strongly alkaline  
*Salinity:* 40 to 50 millimhos per centimeter  
*Sodicity (SAR):* 46 to 60

*Depth:* 4 to 16 inches  
*Texture:* Silt loam, silty clay loam  
*Structure:* Massive  
*Consistence:* Hard, brittle  
*Reaction:* Strongly alkaline  
*Salinity:* 25 to 40 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46

*Depth:* 16 to 60 inches  
*Texture:* Silt loam, silty clay loam  
*Structure:* Massive  
*Consistence:* Very hard, very firm  
*Reaction:* Strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46

#### **Soil and Water Features**

*Depth to a seasonal high water table:* 42 to 60 inches  
*Frequency of flooding:* Rare  
*Permeability:* Slow  
*Available water capacity:* 10 to 12 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Very slow  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—4L  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* High

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Aerlic Halaquepts, fine-silty, mixed (calcareous), mesic  
*Positions on landscape:* Concave, narrow areas adjacent to channels  
*Distinctive present vegetation:* Silver buffaloberry, Torrey quailbush, basin wildrye

##### **Inclusion 2**

*Positions on landscape:* Small, irregularly shaped sink areas



*Distinctive present vegetation:* None

### **Major Uses**

*Current uses:* Livestock grazing, wildlife habitat

*Potential foreseeable use:* Irrigated pasture

### **Suitability for Wildlife Habitat Elements**

#### **Umblerland Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Wendane Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Ocala Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

### **Suitability and Limitations for Selected Uses**

#### **Umblerland Soil**

*Range seeding:* Poor—excess salt, excess sodium, too crusty

*Roadfill:* Poor—low strength, shrink-swell

*Topsoil:* Poor—excess salt, excess sodium, too clayey

*Daily cover for landfill:* Poor—too clayey, hard to pack, excess salt

*Shallow excavations:* Moderate—too clayey, wetness

*Local roads and streets:* Severe—low strength, frost action, shrink-swell

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Wendane Soil**

*Range seeding:* Poor—excess salt, excess sodium

*Roadfill:* Poor—low strength

*Topsoil:* Poor—excess salt, excess sodium

*Daily cover for landfill:* Poor—excess salt, excess sodium

*Shallow excavations:* Moderate—wetness, flooding

*Local roads and streets:* Severe—flooding, frost action

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Ocala Soil**

*Range seeding:* Poor—excess salt, excess sodium

*Roadfill:* Poor—low strength

*Topsoil:* Poor—excess salt, excess sodium

*Daily cover for landfill:* Poor—excess sodium

*Shallow excavations:* Moderate—wetness

*Local roads and streets:* Severe—low strength, frost action

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Restrictive Features for Selected Practices**

#### **Umblerland Soil**

*Drainage:* Percs slowly, frost action, excess salt

*Irrigation:* Wetness, percs slowly

*Terraces and diversions:* Erodes easily, wetness, percs slowly

### **Interpretive Groups**

*Land capability classification:* Umblerland, Wendane, and Ocala soils—VIIw, nonirrigated

*Range site:* Umblerland soil—024X010N; Wendane soil—024X007N; Ocala soil—024X011N; Inclusion 1—028B057N; Inclusion 2—none

## **262—Umblerland silt loam, frequently flooded, 0 to 2 percent slopes**

*Positions on landscape:* Alluvial flats

### **Composition**

*Major component:*

Umblerland silt loam, frequently flooded, 0 to 2 percent slopes—90 percent

*Contrasting inclusions:*

Wendane silt loam, frequently flooded, 0 to 2 percent slopes—6 percent

Needle Peak silt loam, occasionally flooded, 0 to 2 percent slopes—3 percent

Wendane silt loam, strongly sodic, 0 to 2 percent slopes—1 percent

### **Characteristics of the Umblerland Soil**

*Classification:* Aeris Halaquepts, fine, montmorillonitic (calcareous), mesic

*Positions on landscape:* Alluvial flats

*Parent material:* Silty lacustrine sediment derived from various kinds of rock

*Slope:* 0 to 2 percent

*Elevation:* 5,500 to 5,600 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 130 days

*Dominant present vegetation:* Alkali sacaton, alkali cordgrass, inland saltgrass

### **Typical Profile**

*Depth:* 0 to 7 inches

*Texture:* Silt loam

*Structure:* Granular

*Consistence:* Slightly hard, friable  
*Reaction:* Very strongly alkaline  
*Salinity:* 16 to 30 millimhos per centimeter  
*Sodicity (SAR):* 25 to 40

*Depth:* 7 to 60 inches  
*Texture:* Silty clay, silty clay loam  
*Structure:* Angular blocky  
*Consistence:* Hard, firm  
*Reaction:* Very strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 13 to 25

#### **Soil and Water Features**

*Depth to a seasonal high water table:* 30 to 60 inches  
*Frequency of flooding:* Frequent for long periods in  
 December through June  
*Permeability:* Very slow  
*Available water capacity:* 10 to 12 inches  
*Water-supplying capacity:* 11 inches  
*Runoff:* Very slow  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.43; T value—5;  
 wind erodibility group—4L  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* High  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* High

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Aeris Halaquepts, fine-silty, mixed  
 (calcareous), mesic  
*Positions on landscape:* Convex alluvial flats  
*Distinctive present vegetation:* Black greasewood, basin  
 wildrye

##### **Inclusion 2**

*Classification:* Aquic Torriorthents, fine-silty, mixed  
 (calcareous), mesic  
*Positions on landscape:* Fan skirts over alluvial flats  
*Distinctive present vegetation:* Basin big sagebrush,  
 black greasewood, basin wildrye

##### **Inclusion 3**

*Classification:* Aeris Halaquepts, fine-silty, mixed  
 (calcareous), mesic  
*Positions on landscape:* Narrow linear areas adjacent to  
 recent channels  
*Distinctive present vegetation:* Silver buffaloberry, Torrey  
 quailbush, basin wildrye

#### **Major Uses**

*Current uses:* Livestock grazing, wildlife habitat  
*Potential foreseeable use:* Irrigated pasture

#### **Suitability for Wildlife Habitat Elements**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor

#### **Suitability and Limitations for Selected Uses**

*Range seeding:* Poor—excess salt, excess sodium  
*Roadfill:* Poor—low strength, shrink-swell  
*Topsoil:* Poor—excess salt, excess sodium, too clayey  
*Daily cover for landfill:* Poor—too clayey, hard to pack,  
 excess salt  
*Shallow excavations:* Moderate—too clayey, wetness,  
 flooding  
*Local roads and streets:* Severe—low strength, flooding,  
 shrink-swell  
*Pond reservoir areas:* Slight  
*Embankments, dikes, and levees:* Severe—excess salt,  
 excess sodium  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Restrictive Features for Selected Practices**

*Drainage:* Percs slowly, frost action, flooding  
*Irrigation:* Wetness, percs slowly  
*Terraces and diversions:* Erodes easily, wetness, percs  
 slowly

#### **Interpretive Groups**

*Land capability classification:* Umberland soil—VIIw,  
 nonirrigated  
*Range site:* Umberland soil—028B002N; Inclusion 1—  
 024X007N; Inclusion 2—024X006N; Inclusion 3—  
 028B057N

### **270—Tomel-Laxal association**

*Positions on landscape:* Fan piedmonts

#### **Composition**

*Major components:*  
 Tomel very gravelly sandy loam, 2 to 8 percent  
 slopes—60 percent  
 Laxal gravelly loam, 2 to 8 percent slopes—30 percent  
*Contrasting inclusions:*  
 Izo gravelly sandy loam, 4 to 8 percent slopes—5  
 percent  
 Entic Durorthids, loamy-skeletal, mixed, mesic, 4 to 8  
 percent slopes—5 percent

#### **Characteristics of the Tomel Soil**

*Classification:* Typic Durargids, loamy-skeletal, mixed,  
 mesic, shallow  
*Positions on landscape:* Fan piedmont remnants  
*Parent material:* Alluvium derived from limestone, shale,  
 and chert

*Slope:* 2 to 8 percent  
*Elevation:* 5,600 to 6,200 feet  
*Average annual precipitation:* About 6 inches  
*Average annual air temperature:* About 51 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Galleta, bottlebrush  
 squirreltail, shadscale, Bailey greasewood

#### **Typical Profile**

*Rock fragments on surface:* 65 percent pebbles  
*Depth:* 0 to 3 inches  
*Texture:* Very gravelly sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5  
*Depth:* 3 to 12 inches  
*Texture:* Very gravelly clay loam, very gravelly sandy clay loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Very strongly alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5  
*Depth:* 12 to 27 inches  
*Material:* Indurated hardpan  
*Structure:* Massive  
*Consistence:* Extremely hard, extremely firm  
*Depth:* 27 to 60 inches  
*Texture:* Extremely gravelly sand  
*Structure:* Massive  
*Consistence:* Extremely hard, extremely firm  
*Reaction:* Strongly alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 2 to 10

#### **Soil and Water Features**

*Depth to the hardpan:* 10 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 0.8 to 1.4 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.10; T value—1; wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Characteristics of the Laxal Soil**

*Classification:* Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic  
*Positions on landscape:* Inset fans  
*Parent material:* Alluvium derived from shale and volcanic rock  
*Slope:* 2 to 8 percent  
*Elevation:* 5,600 to 6,200 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 50 degrees F  
*Frost-free season:* About 130 days  
*Dominant present vegetation:* Shadscale, Bailey greasewood, galleta

#### **Typical Profile**

*Depth:* 0 to 10 inches  
*Texture:* Gravelly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5  
*Depth:* 10 to 60 inches  
*Texture:* Stratified very gravelly sandy loam to very gravelly loamy coarse sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Strongly alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 8 to 13

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* Rare  
*Permeability:* Moderately rapid  
*Available water capacity:* 2.7 to 5.0 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Medium  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.28; T value—5; wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—moderate  
*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Typic Torriorthents, sandy-skeletal, mixed, mesic  
*Positions on landscape:* Areas adjacent to active channels

*Distinctive present vegetation:* Basin big sagebrush, burrobrush, bluegrass

#### **Inclusion 2**

*Classification:* Entic Durorthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Convex, higher areas on fan piedmont remnants

*Distinctive present vegetation:* Black sagebrush, Indian ricegrass

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Tomel Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

##### **Laxal Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Suitability and Limitations for Selected Uses**

##### **Tomel Soil**

*Range seeding:* Poor—too arid, droughty, small stones

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—cemented pan, too sandy, small stones

*Daily cover for landfill:* Poor—cemented pan, seepage, too sandy

*Shallow excavations:* Severe—cemented pan, cutbanks cave

*Local roads and streets:* Severe—cemented pan

*Pond reservoir areas:* Severe—seepage, cemented pan

*Embankments, dikes, and levees:* Severe—seepage, excess salt

*Sand:* Probable source

*Gravel:* Probable source

##### **Laxal Soil**

*Range seeding:* Poor—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—flooding

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage, excess salt

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Tomel soil—VIIIs, nonirrigated; Laxal soil—IVe, irrigated, and VIIIs, nonirrigated

*Range site:* Tomel and Laxal soils—029X017N;  
Inclusion 1—029X009N; Inclusion 2—029X008N

### **280—Chiara-Filiran association**

*Positions on landscape:* Fan piedmonts

#### **Composition**

*Major components:*

Chiara gravelly loam, 2 to 8 percent slopes—45 percent

Filiran very gravelly loam, 2 to 4 percent slopes—40 percent

*Contrasting inclusions:*

Durixerollic Camborthids, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—7 percent

Entic Durorthids, loamy, mixed, mesic, shallow, 2 to 4 percent slopes—4 percent

Duric Camborthids, loamy-skeletal, mixed, mesic, 15 to 50 percent slopes—4 percent

#### **Characteristics of the Chiara Soil**

*Classification:* Xerollic Durorthids, loamy, mixed, mesic, shallow

*Positions on landscape:* The higher summits of fan piedmont remnants

*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 2 to 8 percent

*Elevation:* 5,200 to 5,700 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

#### **Typical Profile**

*Depth:* 0 to 5 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 5 to 16 inches

*Texture:* Silt loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Depth:* 16 inches

*Material:* Indurated hardpan

*Structure:* Massive

*Consistence:* Extremely hard, extremely firm

**Soil and Water Features***Depth to the hardpan:* 10 to 20 inches*Depth to a seasonal high water table:* More than 60 inches*Frequency of flooding:* None*Permeability:* Moderate*Available water capacity:* 2.3 to 2.7 inches*Water-supplying capacity:* 8 inches*Runoff:* Medium*Hydrologic group:* D*Erosion factors (upper layer):* K value—0.20; T value—1; wind erodibility group—6*Hazard of erosion:* By water—slight; by wind—slight*Shrink-swell potential:* Low*Corrosivity:* To steel—high; to concrete—low*Potential for frost action:* Moderate**Characteristics of the Fillran Soil***Classification:* Haploxerollic Nadurargids, fine, montmorillonitic, mesic*Positions on landscape:* The lower, broad summits of slightly dissected fan piedmont remnants*Parent material:* Loess over mixed alluvium*Slope:* 2 to 4 percent*Elevation:* 5,200 to 5,700 feet*Average annual precipitation:* About 9 inches*Average annual air temperature:* About 48 degrees F*Frost-free season:* About 120 days*Dominant present vegetation:* Bottlebrush squirreltail, bluegrass, Wyoming big sagebrush**Typical Profile***Rock fragments on surface:* 10 percent pebbles*Depth:* 0 to 7 inches*Texture:* Very gravelly loam*Structure:* Platy*Consistence:* Slightly hard, friable*Reaction:* Mildly alkaline*Salinity:* 0 to 2 millimhos per centimeter*Depth:* 7 to 12 inches*Texture:* Gravelly silt loam*Structure:* Platy*Consistence:* Hard, friable*Reaction:* Moderately alkaline*Salinity:* 0 to 2 millimhos per centimeter*Depth:* 12 to 33 inches*Texture:* Clay, gravelly clay*Structure:* Prismatic*Consistence:* Very hard, very firm*Reaction:* Strongly alkaline*Salinity:* 4 to 8 millimhos per centimeter*Sodicity (SAR):* 13 to 25*Depth:* 33 to 60 inches*Material:* Cemented hardpan**Soil and Water Features***Depth to the hardpan:* 20 to 40 inches*Depth to a seasonal high water table:* More than 60 inches*Frequency of flooding:* None*Permeability:* Very slow*Available water capacity:* 4.5 to 5.5 inches*Water-supplying capacity:* 8 inches*Runoff:* Slow*Hydrologic group:* D*Erosion factors (upper layer):* K value—0.20; T value—2; wind erodibility group—7*Hazard of erosion:* By water—slight; by wind—slight*Shrink-swell potential:* High*Corrosivity:* To steel—high; to concrete—high*Potential for frost action:* Low**Contrasting Inclusions****Inclusion 1***Classification:* Durixerollic Camborthids, loamy-skeletal, mixed, mesic*Positions on landscape:* Concave, narrow inset fans*Distinctive present vegetation:* Wyoming big sagebrush, bluegrass, Thurber needlegrass**Inclusion 2***Classification:* Entic Durorthids, loamy, mixed, mesic, shallow*Positions on landscape:* Toe slopes of fan piedmont remnants at the lower elevations*Distinctive present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail**Inclusion 3***Classification:* Duric Camborthids, loamy-skeletal, mixed, mesic*Positions on landscape:* Side slopes of fan piedmont remnants*Distinctive present vegetation:* Wyoming big sagebrush, shadscale, bluegrass, bottlebrush squirreltail**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Chlara Soil***Wild herbaceous plants (nonirrigated):* Fair*Shrubs (nonirrigated):* Fair**Fillran Soil***Wild herbaceous plants (nonirrigated):* Very poor*Shrubs (nonirrigated):* Very poor

### ***Suitability and Limitations for Selected Uses***

#### **Chiara Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—cemented pan

*Daily cover for landfill:* Poor—cemented pan

*Shallow excavations:* Severe—cemented pan

*Local roads and streets:* Severe—cemented pan

*Pond reservoir areas:* Severe—cemented pan

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Filiran Soil**

*Range seeding:* Poor—small stones, excess sodium

*Roadfill:* Poor—cemented pan, shrink-swell, low strength

*Topsoil:* Poor—too clayey, small stones, excess sodium

*Daily cover for landfill:* Poor—cemented pan, hard to pack

*Shallow excavations:* Severe—cemented pan

*Local roads and streets:* Severe—shrink-swell, low strength

*Pond reservoir areas:* Moderate—cemented pan, slope

*Embankments, dikes, and levees:* Severe—excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### ***Interpretive Groups***

*Land capability classification:* Chiara soil—IVe, irrigated, and VIIs, nonirrigated; Filiran soil—VIIs, nonirrigated

*Range site:* Chiara and Filiran soils—028B010N;

Inclusion 1—028B010N; Inclusion 2—024X002N;

Inclusion 3—024X045N

### **284—Chiara-Dewar association**

*Positions on landscape:* Fan piedmonts

#### ***Composition***

*Major components:*

Chiara gravelly loam, 2 to 8 percent slopes—55 percent

Dewar gravelly loam, 2 to 8 percent slopes—30 percent

*Contrasting inclusions:*

Orovada gravelly loam, 2 to 8 percent slopes—9 percent

Typic Durargids, loamy, mixed, mesic, shallow, 2 to 8 percent slopes—3 percent

Durixerollic Camborthids, loamy-skeletal, mixed, mesic, 8 to 15 percent slopes—3 percent

#### ***Characteristics of the Chiara Soil***

*Classification:* Xerollic Durorthids, loamy, mixed, mesic, shallow

*Positions on landscape:* The lower fan piedmont remnants

*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 2 to 8 percent

*Elevation:* 5,900 to 6,200 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

#### **Typical Profile**

*Depth:* 0 to 5 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 5 to 16 inches

*Texture:* Silt loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Depth:* 16 inches

*Material:* Indurated hardpan

*Structure:* Massive

*Consistence:* Extremely hard, extremely firm

#### **Soil and Water Features**

*Depth to the hardpan:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 2.2 to 2.7 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.20; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### ***Characteristics of the Dewar Soil***

*Classification:* Xerollic Durargids, loamy, mixed, mesic, shallow

*Positions on landscape:* The higher fan piedmont remnants

*Parent material:* Loess and mixed silty alluvium that include volcanic ash

*Slope:* 2 to 8 percent  
*Elevation:* 5,900 to 6,200 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 47 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Wyoming big sagebrush,  
 Indian ricegrass

#### **Typical Profile**

*Depth:* 0 to 4 inches  
*Texture:* Gravelly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 4 to 14 inches  
*Texture:* Gravelly clay loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 14 to 50 inches  
*Material:* Indurated hardpan  
*Structure:* Platy  
*Consistence:* Extremely hard, extremely firm

#### **Soil and Water Features**

*Depth to the hardpan:* 13 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 1.7 to 2.3 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.37; T value—1; wind erodibility group—7  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Inset fans  
*Distinctive present vegetation:* Wyoming big sagebrush, Thurber needlegrass, bluegrass

##### **Inclusion 2**

*Classification:* Typic Durargids, loamy, mixed, mesic, shallow

*Positions on landscape:* Convex, dissected fan aprons  
*Distinctive present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

##### **Inclusion 3**

*Classification:* Durixerollic Camborthids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Toe slopes of fan piedmont remnants  
*Distinctive present vegetation:* Wyoming big sagebrush, needlegrass, bluegrass

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Chiara Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

##### **Dewar Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

##### **Chiara Soil**

*Range seeding:* Poor—droughty  
*Roadfill:* Poor—cemented pan  
*Topsoil:* Poor—cemented pan  
*Daily cover for landfill:* Poor—cemented pan  
*Shallow excavations:* Severe—cemented pan  
*Local roads and streets:* Severe—cemented pan  
*Pond reservoir areas:* Severe—cemented pan  
*Embankments, dikes, and levees:* Severe—piping  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

##### **Dewar Soil**

*Range seeding:* Poor—droughty  
*Roadfill:* Poor—cemented pan  
*Topsoil:* Poor—cemented pan, small stones  
*Daily cover for landfill:* Poor—cemented pan  
*Shallow excavations:* Severe—cemented pan  
*Local roads and streets:* Severe—cemented pan  
*Pond reservoir areas:* Severe—cemented pan  
*Embankments, dikes, and levees:* Severe—piping  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Chiara and Dewar soils—Ive, irrigated, and Vlls, nonirrigated  
*Range site:* Chiara and Dewar soils—028B010N; Inclusion 1—028B010N; Inclusion 2—028B017N; Inclusion 3—028B010N

**290—Creemon silt loam, 0 to 2 percent slopes**

*Positions on landscape:* Fan skirts, the lower fan piedmonts

**Composition**

*Major component:*

Creemon silt loam, 0 to 2 percent slopes—85 percent

*Contrasting inclusions:*

Broyles very fine sandy loam, 0 to 2 percent slopes—5 percent

Relley silt loam, 0 to 2 percent slopes—5 percent

Wholan very fine sandy loam, 0 to 2 percent slopes—5 percent

**Characteristics of the Creemon Soil**

*Classification:* Duric Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Fan skirts

*Parent material:* Mixed silty alluvium that includes volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 5,100 to 6,200 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass

**Typical Profile**

*Depth:* 0 to 10 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 10 to 15 inches

*Texture:* Silt loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

*Depth:* 15 to 60 inches

*Texture:* Stratified very fine sandy loam to silt loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 10 to 12 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

**Contrasting Inclusions****Inclusion 1**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* The higher fan skirt margins

*Distinctive present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

**Inclusion 2**

*Classification:* Duric Camborthids, fine-silty, mixed, mesic

*Positions on landscape:* The lower fan skirt margins

*Distinctive present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

**Inclusion 3**

*Classification:* Typic Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Fan aprons, inset fans

*Distinctive present vegetation:* Winterfat, bottlebrush squirreltail

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

**Suitability and Limitations for Selected Uses**

*Range seeding:* Poor—too arid, excess salt

*Roadfill:* Good

*Topsoil:* Poor—thin layer

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Slight

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping, excess salt

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Restrictive Features for Selected Practices**

*Drainage:* Deep to water



*Irrigation:* Erodes easily, excess salt  
*Terraces and diversions:* Erodes easily

### **Interpretive Groups**

*Land capability classification:* Creemon soil—IIc, irrigated, and VIIc, nonirrigated  
*Range site:* Creemon soil—024X002N; Inclusions 1 and 2—024X002N; Inclusion 3—024X004N

## **291—Creemon-Wholan association**

*Positions on landscape:* Fan skirts, the lower fan piedmonts

### **Composition**

*Major components:*

Creemon silt loam, 0 to 2 percent slopes—50 percent  
 Wholan silt loam, 0 to 2 percent slopes—20 percent  
 Wholan silt loam, alkaline, 0 to 2 percent slopes—15 percent

*Contrasting inclusions:*

Caphor very fine sandy loam, 0 to 2 percent slopes—7 percent  
 Batan silt loam, 0 to 2 percent slopes—4 percent  
 Rasille silt loam, 0 to 2 percent slopes—4 percent

### **Characteristics of the Creemon Soil**

*Classification:* Duric Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Smooth fan skirts

*Parent material:* Mixed silty alluvium that includes volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 5,600 to 5,800 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass

### **Typical Profile**

*Depth:* 0 to 10 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 10 to 15 inches

*Texture:* Silt loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

*Depth:* 15 to 60 inches

*Texture:* Stratified very fine sandy loam to silt loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 10 to 12 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

### **Characteristics of the Wholan Soil**

*Classification:* Typic Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Smooth inset fans

*Parent material:* Loess mantle over silty alluvium

*Slope:* 0 to 2 percent

*Elevation:* 5,600 to 5,800 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, bluegrass, winterfat

### **Typical Profile**

*Depth:* 0 to 13 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 13 to 60 inches

*Texture:* Silt loam, very fine sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Rare

*Permeability:* Moderate

*Available water capacity:* 10 to 11 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

**Characteristics of the Wholan Soil, Alkaline**

*Classification:* Typic Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Slightly dissected

*Parent material:* Loess mantle over silty alluvium

*Slope:* 0 to 2 percent

*Elevation:* 5,600 to 5,800 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, bluegrass, winterfat

**Typical Profile**

*Depth:* 0 to 13 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 13 to 60 inches

*Texture:* Silt loam, very fine sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Rare

*Permeability:* Moderate

*Available water capacity:* 10 to 11 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

**Contrasting Inclusions****Inclusion 1**

*Classification:* Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic

*Positions on landscape:* Fan skirts

*Distinctive present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

**Inclusion 2**

*Classification:* Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Adjacent alluvial flat remnants near the lower lying areas

*Distinctive present vegetation:* Shadscale, black greasewood

**Inclusion 3**

*Classification:* Durixerollic Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Shallow fan drainageways

*Distinctive present vegetation:* Wyoming big sagebrush, bluegrass, needlegrass

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Creemon Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

**Wholan Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

**Wholan Soil, Alkaline**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

**Suitability and Limitations for Selected Uses****Creemon Soil**

*Range seeding:* Poor—too arid, excess salt

*Roadfill:* Good

*Topsoil:* Poor—thin layer

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Slight

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping, excess salt

*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Wholan Soil**

*Range seeding:* Poor—too arid  
*Roadfill:* Good  
*Topsoil:* Poor—excess salt  
*Daily cover for landfill:* Good  
*Shallow excavations:* Slight  
*Local roads and streets:* Moderate—flooding  
*Pond reservoir areas:* Moderate—seepage  
*Embankments, dikes, and levees:* Severe—piping  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Wholan Soil, Alkaline**

*Range seeding:* Poor—too arid  
*Roadfill:* Good  
*Topsoil:* Poor—excess salt  
*Daily cover for landfill:* Good  
*Shallow excavations:* Slight  
*Local roads and streets:* Moderate—flooding  
*Pond reservoir areas:* Moderate—seepage  
*Embankments, dikes, and levees:* Severe—piping  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Restrictive Features for Selected Practices**

##### **Creemon Soil**

*Drainage:* Deep to water  
*Irrigation:* Erodes easily, excess salt  
*Terraces and diversions:* Erodes easily

##### **Wholan Soil**

*Drainage:* Deep to water  
*Irrigation:* Erodes easily  
*Terraces and diversions:* Erodes easily

##### **Wholan Soil, Alkaline**

*Drainage:* Deep to water  
*Irrigation:* Erodes easily  
*Terraces and diversions:* Erodes easily

#### **Interpretive Groups**

*Land capability classification:* Creemon, Wholan, and Wholan, alkaline, soils—IIC, irrigated, and VIIc, nonirrigated

*Range site:* Creemon soil—024X002N; Wholan soil—024X004N; Wholan soil, alkaline—024X012N; Inclusion 1—028B017N; Inclusion 2—024X003N; Inclusion 3—028B010N

#### **295—Creemon-Cren association**

*Positions on landscape:* Fan skirts, the lower fan piedmonts

#### **Composition**

##### *Major components:*

Creemon silt loam, 0 to 2 percent slopes—55 percent  
 Cren silt loam, 0 to 2 percent slopes—30 percent

##### *Contrasting inclusions:*

Xeric Torriorthents, coarse-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—5 percent  
 Typic Torriorthents, coarse-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—5 percent  
 Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic, 0 to 2 percent slopes—5 percent

#### **Characteristics of the Creemon Soil**

*Classification:* Duric Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Fan skirts

*Parent material:* Mixed silty alluvium that includes volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 5,200 to 6,100 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass

#### **Typical Profile**

*Depth:* 0 to 10 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 10 to 15 inches

*Texture:* Silt loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

*Depth:* 15 to 60 inches

*Texture:* Stratified very fine sandy loam to silt loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate  
*Available water capacity:* 10 to 12 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.55; T value—5;  
     wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* Low

### **Characteristics of the Cren Soil**

*Classification:* Durorthidic Torriorthents, coarse-silty, mixed (calcareous), mesic  
*Positions on landscape:* Inset fans  
*Parent material:* Mixed alluvium that includes volcanic ash  
*Slope:* 0 to 2 percent  
*Elevation:* 5,200 to 6,100 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Bottlebrush squirreltail, shadscale, bud sagebrush

### **Typical Profile**

*Depth:* 0 to 7 inches  
*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 7 to 26 inches  
*Texture:* Silt loam  
*Structure:* Massive  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 26 to 60 inches  
*Texture:* Silt loam  
*Structure:* Massive  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 16 to 30 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate

*Available water capacity:* 11 to 12 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.55; T value—5;  
     wind erodibility group—4L  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Xeric Torriorthents, coarse-silty, mixed (calcareous), mesic  
*Positions on landscape:* Fan drainageways  
*Distinctive present vegetation:* Basin big sagebrush, black greasewood, basin wildrye

#### **Inclusion 2**

*Classification:* Typic Torriorthents, coarse-silty, mixed (calcareous), mesic  
*Positions on landscape:* The lower margins of fan skirts  
*Distinctive present vegetation:* Shadscale, bud sagebrush

#### **Inclusion 3**

*Classification:* Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic  
*Positions on landscape:* Active channel banks  
*Distinctive present vegetation:* Big sagebrush, black greasewood, basin wildrye

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Creemon Soil**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor

#### **Cren Soil**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor

### **Suitability and Limitations for Selected Uses**

#### **Creemon Soil**

*Range seeding:* Poor—too arid, excess salt  
*Roadfill:* Good  
*Topsoil:* Poor—thin layer  
*Daily cover for landfill:* Good  
*Shallow excavations:* Slight  
*Local roads and streets:* Slight  
*Pond reservoir areas:* Moderate—seepage  
*Embankments, dikes, and levees:* Severe—piping, excess salt  
*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Cren Soil**

*Range seeding:* Poor—too arid

*Roadfill:* Good

*Topsoil:* Fair—thin layer

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Slight

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping, excess salt

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Restrictive Features for Selected Practices**

##### **Creemon Soil**

*Drainage:* Deep to water

*Irrigation:* Erodes easily, excess salt

*Terraces and diversions:* Erodes easily

##### **Cren Soil**

*Drainage:* Deep to water

*Irrigation:* Erodes easily, excess salt

*Terraces and diversions:* Erodes easily

#### **Interpretive Groups**

*Land capability classification:* Creemon and Cren soils—  
IIc, irrigated, and VIIc, nonirrigated

*Range site:* Creemon and Cren soils—024X002N;  
Inclusion 1—024X006N; Inclusion 2—024X003N;  
Inclusion 3—024X041N

### **296—Creemon-Hessing association**

*Positions on landscape:* Fan skirts, the lower fan  
piedmonts

#### **Composition**

*Major components:*

Creemon silt loam, 0 to 2 percent slopes—65 percent

Hessing silt loam, 0 to 2 percent slopes—20 percent

*Contrasting inclusions:*

Durixerollic Camborthids, coarse-silty, mixed, mesic, 0  
to 2 percent slopes—8 percent

Duric Camborthids, coarse-loamy, mixed, mesic, 0 to 2  
percent slopes—4 percent

Typic Camborthids, loamy-skeletal, mixed, mesic, 0 to 4  
percent slopes—3 percent

#### **Characteristics of the Creemon Soil**

*Classification:* Duric Camborthids, coarse-silty, mixed,  
mesic

*Positions on landscape:* Convex fan skirts

*Parent material:* Mixed silty alluvium that includes  
volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 5,100 to 5,600 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Shadscale, bud  
sagebrush, Indian ricegrass

#### **Typical Profile**

*Depth:* 0 to 10 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 10 to 15 inches

*Texture:* Silt loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

*Depth:* 15 to 60 inches

*Texture:* Stratified very fine sandy loam to silt loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60  
inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 10 to 12 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5;  
wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

#### **Characteristics of the Hessing Soil**

*Classification:* Typic Camborthids, coarse-loamy, mixed,  
mesic

*Positions on landscape:* Broad inset fans

*Parent material:* Loess and silty alluvium that include  
volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 5,100 to 5,600 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Bottlebrush squirreltail,  
 Indian ricegrass, shadscale, bud sagebrush

#### **Typical Profile**

*Depth:* 0 to 4 inches  
*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

*Depth:* 4 to 11 inches  
*Texture:* Silty clay loam, silt loam  
*Structure:* Subangular blocky  
*Consistence:* Hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

*Depth:* 11 to 18 inches  
*Texture:* Very fine sandy loam, silt loam  
*Structure:* Massive  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

*Depth:* 18 to 30 inches  
*Texture:* Gravelly loam  
*Structure:* Massive  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 10 to 25

*Depth:* 30 to 60  
*Texture:* Very gravelly sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Moderately alkaline  
*Salinity:* 16 to 30 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 6.4 to 7.5 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Slow  
*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—3;  
 wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Durixerollic Camborthids, coarse-silty, mixed, mesic  
*Positions on landscape:* Channel banks  
*Distinctive present vegetation:* Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail

##### **Inclusion 2**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Fan skirt margins  
*Distinctive present vegetation:* Shadscale, winterfat, bud sagebrush

##### **Inclusion 3**

*Classification:* Typic Camborthids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Channels  
*Distinctive present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Creemon Soil**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor

##### **Hessing Soil**

*Wild herbaceous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Poor

#### **Suitability and Limitations for Selected Uses**

##### **Creemon Soil**

*Range seeding:* Poor—too arid, excess salt  
*Roadfill:* Good  
*Topsoil:* Poor—thin layer  
*Daily cover for landfill:* Good  
*Shallow excavations:* Slight  
*Local roads and streets:* Slight  
*Pond reservoir areas:* Moderate—seepage  
*Embankments, dikes, and levees:* Severe—piping, excess salt  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

##### **Hessing Soil**

*Range seeding:* Poor—too arid  
*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim  
*Daily cover for landfill:* Poor—seepage, small stones  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Slight  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—seepage, excess salt  
*Sand:* Probable source  
*Gravel:* Probable source

### ***Restrictive Features for Selected Practices***

#### **Creemon Soil**

*Drainage:* Deep to water  
*Irrigation:* Erodes easily, excess salt  
*Terraces and diversions:* Erodes easily

#### **Hessing Soil**

*Drainage:* Deep to water  
*Irrigation:* Erodes easily, excess salt  
*Terraces and diversions:* Erodes easily, too sandy

### ***Interpretive Groups***

*Land capability classification:* Creemon soil—IIC, irrigated, and VIIc, nonirrigated; Hessing soil—IIs, irrigated, and VIIs, nonirrigated  
*Range site:* Creemon and Hessing soils—024X002N; Inclusion 1—024X020N; Inclusion 2—024X014N; Inclusion 3—024X002N

## **297—Creemon-Rasille-Tulase association**

*Positions on landscape:* Fan skirts, the lower fan piedmonts

### ***Composition***

#### ***Major components:***

Creemon silt loam, 0 to 2 percent slopes—45 percent  
 Rasille very fine sandy loam, 0 to 2 percent slopes—20 percent  
 Tulase very fine sandy loam, 0 to 2 percent slopes—20 percent

#### ***Contrasting inclusions:***

Batan very fine sandy loam, 0 to 2 percent slopes—5 percent  
 Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic, 0 to 2 percent slopes—5 percent  
 Durixerollic Camborthids, loamy-skeletal, mixed, mesic, 0 to 4 percent slopes—5 percent

### ***Characteristics of the Creemon Soil***

*Classification:* Duric Camborthids, coarse-silty, mixed, mesic  
*Positions on landscape:* The lower fan skirts  
*Parent material:* Mixed silty alluvium that includes volcanic ash

*Slope:* 0 to 2 percent  
*Elevation:* 5,600 to 5,800 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass

### ***Typical Profile***

*Depth:* 0 to 10 inches  
*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

*Depth:* 10 to 15 inches  
*Texture:* Silt loam  
*Structure:* Massive  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 2 to 10  
*Depth:* 15 to 60 inches  
*Texture:* Stratified very fine sandy loam to silt loam  
*Structure:* Massive  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 13 to 25

### ***Soil and Water Features***

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 10 to 12 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* Low

### ***Characteristics of the Rasille Soil***

*Classification:* Durixerollic Camborthids, coarse-silty, mixed, mesic  
*Positions on landscape:* Concave inset fans  
*Parent material:* Silty alluvium derived from loess and various kinds of rock  
*Slope:* 0 to 2 percent

*Elevation:* 5,600 to 5,800 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bottlebrush squirreltail,  
 Indian ricegrass, needlegrass, Wyoming big  
 sagebrush

#### **Typical Profile**

*Depth:* 0 to 6 inches  
*Texture:* Very fine sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 6 to 15 inches  
*Texture:* Silt loam  
*Structure:* Prismatic  
*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 15 to 60 inches  
*Texture:* Silt loam, very fine sandy loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60  
 inches  
*Frequency of flooding:* Rare  
*Permeability:* Moderate  
*Available water capacity:* 10 to 12 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.49; T value—5;  
 wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Characteristics of the Tulasie Soil**

*Classification:* Durorthidic Xeric Torriorthents, coarse-  
 silty, mixed (calcareous), mesic  
*Positions on landscape:* The upper fan skirts  
*Parent material:* Mixed silty alluvium that includes loess  
 and volcanic ash  
*Slope:* 0 to 2 percent  
*Elevation:* 5,600 to 5,800 feet

*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bottlebrush squirreltail,  
 Indian ricegrass, bluegrass, Wyoming big sagebrush

#### **Typical Profile**

*Depth:* 0 to 6 inches  
*Texture:* Very fine sandy loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Moderately alkaline  
*Depth:* 6 to 60 inches  
*Texture:* Very fine sandy loam, silt loam  
*Structure:* Massive  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60  
 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 10 to 12 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Medium  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.43; T value—5;  
 wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Durorthidic Torriorthents, fine-silty, mixed  
 (calcareous), mesic  
*Positions on landscape:* Convex, lower fan skirt margins  
*Distinctive present vegetation:* Shadscale

##### **Inclusion 2**

*Classification:* Xeric Torriorthents, coarse-loamy, mixed  
 (calcareous), mesic  
*Positions on landscape:* Fan drainageways  
*Distinctive present vegetation:* Big sagebrush, bluegrass,  
 rabbitbrush

##### **Inclusion 3**

*Classification:* Durixerollic Camborthids, loamy-skeletal,  
 mixed, mesic  
*Positions on landscape:* Adjacent remnant beaches and  
 offshore bars  
*Distinctive present vegetation:* Wyoming big sagebrush,  
 spiny hopsage, bluegrass



### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Creemon Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Rasille Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Tulase Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Creemon Soil**

*Range seeding:* Poor—too arid, excess salt

*Roadfill:* Good

*Topsoil:* Poor—thin layer

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Slight

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping, excess salt

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Rasille Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Fair—excess salt

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—flooding, frost action

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Tulase Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Good

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Restrictive Features for Selected Practices**

#### **Creemon Soil**

*Drainage:* Deep to water

*Irrigation:* Erodes easily, excess salt

*Terraces and diversions:* Erodes easily

#### **Rasille Soil**

*Drainage:* Deep to water

*Irrigation:* Soil blowing, erodes easily

*Terraces and diversions:* Erodes easily, soil blowing

#### **Tulase Soil**

*Drainage:* Deep to water

*Irrigation:* Erodes easily

*Terraces and diversions:* Erodes easily

### **Interpretive Groups**

*Land capability classification:* Creemon soil—IIC, irrigated, and VIIc, nonirrigated; Rasille and Tulase soils—IIC, irrigated, and VIc, nonirrigated

*Range site:* Creemon soil—024X003N; Rasille soil—024X0041N; Tulase soil—024X020N; Inclusion 1—024X003N; Inclusion 2—024X041N; Inclusion 3—024X020N

## **298—Creemon-Misad association**

*Positions on landscape:* Bolson floors

### **Composition**

*Major components:*

Creemon silt loam, 0 to 2 percent slopes—60 percent  
Misad gravelly sandy loam, 2 to 4 percent slopes—25 percent

*Contrasting inclusions:*

Broyles very fine sandy loam, 0 to 2 percent slopes—5 percent

Batan silt loam, 0 to 2 percent slopes—5 percent

Orovada fine sandy loam, 0 to 2 percent slopes—3 percent

Durorthidic Xeric Torriorthents, coarse-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—2 percent

### **Characteristics of the Creemon Soil**

*Classification:* Duric Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Smooth beach plain terraces

*Parent material:* Mixed silty alluvium that includes volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 5,600 to 5,800 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass

### **Typical Profile**

*Depth:* 0 to 10 inches

*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5  
*Depth:* 10 to 15 inches  
*Texture:* Silt loam  
*Structure:* Massive  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5  
*Depth:* 15 to 45 inches  
*Texture:* Stratified very fine sandy loam to silt loam  
*Structure:* Massive  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 13 to 25  
*Depth:* 45 to 60 inches  
*Texture:* Stratified gravelly very fine sandy loam to fine sandy loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 13 to 25

**Soil and Water Features**  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 10 to 12 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* Low

### **Characteristics of the Misad Soil**

*Classification:* Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic  
*Positions on landscape:* Offshore bars  
*Parent material:* Mixed alluvium that includes loess and volcanic ash  
*Slope:* 2 to 4 percent  
*Elevation:* 5,600 to 5,800 feet

*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

### **Typical Profile**

*Depth:* 0 to 7 inches  
*Texture:* Gravelly sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 7 to 31 inches  
*Texture:* Stratified fine sandy loam to very gravelly sandy loam  
*Structure:* Massive  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 2 to 10  
*Depth:* 31 to 60 inches  
*Texture:* Stratified very gravelly loamy sand to extremely gravelly coarse sand  
*Structure:* Massive  
*Consistence:* Soft, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 5 to 13

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately rapid  
*Available water capacity:* 3.0 to 4.2 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.20; T value—5; wind erodibility group—4  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Adjacent fan skirts  
*Distinctive present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

**Inclusion 2**

*Classification:* Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Alluvial flats between bars

*Distinctive present vegetation:* Shadscale, black greasewood, bud sagebrush

**Inclusion 3**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Channels

*Dominant present vegetation:* Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail

**Inclusion 4**

*Classification:* Durorthidic Xeric Torriorthents, coarse-silty, mixed (calcareous), mesic

*Positions on landscape:* Concave lagoons

*Distinctive present vegetation:* Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Creemon Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

**Misad Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

**Suitability and Limitations for Selected Uses****Creemon Soil**

*Range seeding:* Poor—too arid, excess salt

*Roadfill:* Good

*Topsoil:* Poor—thin layer

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Slight

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping, excess salt

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Misad Soil**

*Range seeding:* Poor—too arid, excess salt

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

**Restrictive Features for Selected Practices****Creemon Soil**

*Drainage:* Deep to water

*Irrigation:* Erodes easily, excess salt

*Terraces and diversions:* Erodes easily

**Interpretive Groups**

*Land capability classification:* Creemon soil—IIc, irrigated, and VIIc, nonirrigated; Misad soil—IVe, irrigated, and VIIs, nonirrigated

*Range site:* Creemon and Misad soils—024X002N;

Inclusion 1—024X002N; Inclusion 2—024X003N;

Inclusions 3 and 4—024X020N

**301—Cren-Ocala-Playas association**

*Positions on landscape:* Fan skirts, bolson floors

**Composition**

*Major components:*

Cren silt loam, strongly saline-alkali, 0 to 2 percent slopes—40 percent

Ocala silt loam, rarely flooded, 0 to 2 percent slopes—30 percent

Playas—15 percent

*Contrasting inclusions:*

Ocala silt loam, occasionally flooded, 0 to 2 percent slopes—7 percent

Batan silt loam, 0 to 2 percent slopes—6 percent

Isolde fine sand, 4 to 30 percent slopes—2 percent

**Characteristics of the Cren Soil**

*Classification:* Durorthidic Torriorthents, coarse-silty, mixed (calcareous), mesic

*Positions on landscape:* Fan skirts

*Parent material:* Mixed alluvium that includes volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 5,100 to 5,500 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Bottlebrush squirreltail, shadscale, bud sagebrush, black greasewood

**Typical Profile**

*Depth:* 0 to 7 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline  
*Salinity:* 25 to 30 millimhos per centimeter  
*Sodicity (SAR):* 13 to 25  
*Depth:* 7 to 26 inches  
*Texture:* Silt loam  
*Structure:* Massive  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 16 to 25 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46

*Depth:* 26 to 60 inches  
*Texture:* Silt loam  
*Structure:* Massive  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 13 to 25

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 10 to 12 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* Low

#### **Characteristics of the Ocala Soil**

*Classification:* Aeris Halaquepts, fine-silty, mixed (calcareous), mesic  
*Positions on landscape:* Alluvial flats  
*Parent material:* Mixed silty alluvium that includes volcanic ash  
*Slope:* 0 to 2 percent  
*Elevation:* 5,100 to 5,500 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Black greasewood, rubber rabbitbrush, basin wildrye

#### **Typical Profile**

*Depth:* 0 to 4 inches  
*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Slightly hard, friable  
*Reaction:* Very strongly alkaline

*Salinity:* 30 to 50 millimhos per centimeter  
*Sodicity (SAR):* 46 to 60  
*Depth:* 4 to 16 inches  
*Texture:* Silt loam, silty clay loam  
*Structure:* Massive  
*Consistence:* Hard, brittle  
*Reaction:* Strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46

*Depth:* 16 to 60 inches  
*Texture:* Silt loam, silty clay loam  
*Structure:* Massive  
*Consistence:* Very hard, very firm  
*Reaction:* Strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46

#### **Soil and Water Features**

*Depth to a seasonal high water table:* 42 to 60 inches  
*Frequency of flooding:* Rare  
*Permeability:* Slow  
*Available water capacity:* 11 to 13 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Very slow  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—4L  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* High

#### **Characteristics of the Playas**

*Positions on landscape:* Dry lake extensions; small, irregularly shaped sink areas  
*Slope:* Less than 1 percent  
*Elevation:* 5,100 to 5,200 feet

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Aeris Halaquepts, fine-silty, mixed (calcareous), mesic  
*Positions on landscape:* The lower lake plains  
*Distinctive present vegetation:* Black greasewood, basin wildrye

##### **Inclusion 2**

*Classification:* Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic  
*Positions on landscape:* Alluvial flat remnants  
*Distinctive present vegetation:* Shadscale, black greasewood

##### **Inclusion 3**

*Classification:* Typic Torripsamments, mixed, mesic  
*Positions on landscape:* Sand dunes

*Distinctive present vegetation:* Fourwing saltbush, rubber rabbitbrush, black greasewood

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Cren Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Ocala Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

### **Suitability and Limitations for Selected Uses**

#### **Cren Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium

*Roadfill:* Good

*Topsoil:* Poor—excess salt, excess sodium

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Slight

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping, excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Ocala Soil**

*Range seeding:* Poor—excess salt, excess sodium

*Roadfill:* Poor—low strength

*Topsoil:* Poor—excess salt, excess sodium

*Daily cover for landfill:* Poor—excess sodium

*Shallow excavations:* Moderate—wetness

*Local roads and streets:* Severe—low strength, frost action

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Restrictive Features for Selected Practices**

#### **Cren Soil**

*Drainage:* Deep to water

*Irrigation:* Erodes easily, excess salt, excess sodium

*Terraces and diversions:* Erodes easily

### **Interpretive Groups**

*Land capability classification:* Cren soil—IIs, irrigated, and VIIs, nonirrigated; Ocala soil—VIIw, nonirrigated; Playas—VIIIw, nonirrigated

*Range site:* Cren soil—024X003N; Ocala soil—024X011N; Playas—none; Inclusion 1—024X007N; Inclusion 2—024X003N; Inclusion 3—027X016N

## **310—Yobe-Kawich-Playas association**

*Positions on landscape:* Alluvial flats

### **Composition**

*Major components:*

Yobe silt loam, 0 to 2 percent slopes—45 percent

Kawich fine sand, 4 to 30 percent slopes—35 percent

Playas—10 percent

*Contrasting inclusions:*

Typic Torriorthents, fine-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—6 percent

Wendane silt loam, frequently flooded, 0 to 2 percent slopes—4 percent

### **Characteristics of the Yobe Soil**

*Classification:* Aeris Halaquepts, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Alluvial flats

*Parent material:* Mixed silty lacustrine sediment

*Slope:* 0 to 2 percent

*Elevation:* 5,500 to 5,600 feet

*Average annual precipitation:* About 6 inches

*Average annual air temperature:* About 51 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Black greasewood, basin wildrye, rubber rabbitbrush, alkali sacaton

### **Typical Profile**

*Depth:* 0 to 16 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 25 to 40 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

*Depth:* 16 to 60 inches

*Texture:* Silt loam, silty clay loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 16 to 25 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

### **Soil and Water Features**

*Depth to a seasonal high water table:* 36 to 60 inches

*Frequency of flooding:* Occasional for brief to long periods in January through April

*Permeability:* Moderately slow

*Available water capacity:* 10 to 12 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Very slow

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.49; T value—5; wind erodibility group—4L

*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* High

### **Characteristics of the Kawich Soil**

*Classification:* Typic Torripsamments, mixed, mesic  
*Positions on landscape:* Convex dunes over alluvial flats  
*Parent material:* Eolian sand derived from various kinds of rock  
*Slope:* 4 to 30 percent  
*Elevation:* 5,500 to 5,600 feet  
*Average annual precipitation:* About 6 inches  
*Average annual air temperature:* About 53 degrees F  
*Frost-free season:* About 130 days  
*Dominant present vegetation:* Needleandthread, Indian ricegrass, fourwing saltbush, black greasewood

### **Typical Profile**

*Depth:* 0 to 4 inches  
*Texture:* Fine sand  
*Structure:* Subangular blocky  
*Consistence:* Soft, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Depth:* 4 to 42 inches  
*Texture:* Fine sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Strongly alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Depth:* 42 to 60 inches  
*Texture:* Fine sand  
*Structure:* Massive  
*Consistence:* Soft, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 4 to 8 millimhos per centimeter

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Very rapid  
*Available water capacity:* 3.0 to 4.2 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Very slow  
*Hydrologic group:* A  
*Erosion factors (upper layer):* K value—0.15; T value—5; wind erodibility group—1  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

### **Characteristics of the Playas**

*Positions on landscape:* Small, irregularly shaped sink areas  
*Slope:* Less than 1 percent  
*Elevation:* 5,500 to 5,550 feet

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Typic Torriorthents, fine-silty, mixed (calcareous), mesic  
*Positions on landscape:* Alluvial flat remnants  
*Distinctive present vegetation:* Shadscale, black greasewood, bottlebrush squirreltail

#### **Inclusion 2**

*Classification:* Aeric Halaquepts, fine-silty, mixed (calcareous), mesic  
*Positions on landscape:* The lower alluvial flats  
*Distinctive present vegetation:* Black sagebrush, rabbitbrush, basin wildrye

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Yobe Soil**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor  
*Wetland plants:* Poor  
*Shallow water areas:* Fair

#### **Kawich Soil**

*Wild herbaceous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Poor

### **Suitability and Limitations for Selected Uses**

#### **Yobe Soil**

*Range seeding:* Poor—excess salt, excess sodium  
*Roadfill:* Good  
*Topsoil:* Poor—excess salt, excess sodium  
*Daily cover for landfill:* Poor—excess salt, excess sodium  
*Shallow excavations:* Moderate—wetness, flooding  
*Local roads and streets:* Severe—low strength, flooding, frost action  
*Pond reservoir areas:* Moderate—seepage  
*Embankments, dikes, and levees:* Severe—excess salt, excess sodium  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines  
**Kawich Soil**  
*Range seeding:* Poor—too arid, droughty, too sandy  
*Roadfill:* Fair—slope  
*Topsoil:* Poor—too sandy, slope

*Daily cover for landfill:* Poor—too sandy, slope  
*Shallow excavations:* Severe—cutbanks cave, slope  
*Local roads and streets:* Severe—slope  
*Pond reservoir areas:* Severe—seepage, slope  
*Embankments, dikes, and levees:* Severe—seepage, piping  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Yobe soil—VIIw, nonirrigated; Kawich soil—VIIs, nonirrigated; Playas—VIIIw, nonirrigated  
*Range site:* Yobe soil—024X011N; Kawich soil—027X016N; Playas—none; Inclusion 1—024X003N; Inclusion 2—024X007N

## **320—Newpass-Jung association**

*Positions on landscape:* Foothills

### **Composition**

*Major components:*

Newpass very gravelly fine sandy loam, 15 to 30 percent slopes, very stony—60 percent  
 Jung very cobbly loam, 15 to 30 percent slopes—30 percent

*Contrasting inclusions:*

Haplic Durargids, clayey-skeletal, mixed, mesic, 15 to 30 percent slopes—5 percent  
 Rock outcrop—3 percent  
 Haploxerollic Durargids, fine, montmorillonitic, mesic, 8 to 15 percent slopes—2 percent

### **Characteristics of the Newpass Soil**

*Classification:* Haploxerollic Nadurargids, fine, montmorillonitic, mesic  
*Positions on landscape:* North-facing side slopes of foothills  
*Parent material:* Residuum derived from volcanic and metavolcanic rock  
*Slope:* 15 to 30 percent  
*Elevation:* 5,200 to 7,000 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bluegrass, Thurber needlegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 75 percent pebbles  
*Depth:* 0 to 4 inches

*Texture:* Very gravelly fine sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5  
*Depth:* 4 to 14 inches  
*Texture:* Clay  
*Structure:* Prismatic  
*Consistence:* Hard, firm  
*Reaction:* Moderately alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 13 to 25  
*Depth:* 14 to 24 inches  
*Texture:* Very cobbly silty clay, very gravelly clay  
*Structure:* Subangular blocky  
*Consistence:* Hard, firm  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 5 to 13  
*Depth:* 24 to 26 inches  
*Material:* Cemented hardpan  
*Depth:* 26 inches  
*Material:* Unweathered bedrock  
**Soil and Water Features**  
*Depth to the hardpan:* 20 to 29 inches  
*Depth to bedrock:* 21 to 36 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 2.6 to 3.2 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Medium  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.15; T value—2; wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* High  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

### **Characteristics of the Jung Soil**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic  
*Positions on landscape:* South-facing side slopes of foothills  
*Parent material:* Residuum derived from volcanic and metavolcanic rock  
*Slope:* 15 to 30 percent  
*Elevation:* 5,500 to 7,000 feet

*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bluegrass, Indian ricegrass, black sagebrush, small rabbitbrush

### **Typical Profile**

*Rock fragments on surface:* 25 percent cobbles, 20 percent pebbles

*Depth:* 0 to 8 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 8 to 19 inches

*Texture:* Very cobbly clay

*Structure:* Prismatic

*Consistence:* Very hard, firm

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 19 inches

*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.9 to 2.5 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Haplic Durargids, clayey-skeletal, mixed, mesic

*Positions on landscape:* Concave side slopes of foothills

*Distinctive present vegetation:* Shadscale, bud sagebrush

#### **Inclusion 2**

*Positions on landscape:* Rimrock along shoulder slopes of foothills

*Distinctive present vegetation:* None

#### **Inclusion 3**

*Classification:* Haploxerollic Durargids, fine, montmorillonitic, mesic

*Positions on landscape:* Crests and shoulder slopes of foothills

*Distinctive present vegetation:* Wyoming big sagebrush, needleandthread, bluegrass

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Newpass Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Jung Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Newpass Soil**

*Range seeding:* Poor—rooting depth, small stones, excess sodium

*Roadfill:* Poor—depth to rock, shrink-swell, low strength

*Topsoil:* Poor—too clayey, small stones, excess sodium

*Daily cover for landfill:* Poor—depth to rock, hard to pack, large stones

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—shrink-swell, low strength, slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Jung Soil**

*Range seeding:* Poor—large stones, droughty

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, too clayey

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Newpass and Jung soils—VIIs, nonirrigated

*Range site:* Newpass soil—027X008N; Jung soil—027X032N; Inclusion 1—024X025N; Inclusion 2—none; Inclusion 3—027X008N



### 321—Newpass-Old Camp association

*Positions on landscape:* Foothills

#### **Composition**

*Major components:*

Newpass very gravelly fine sandy loam, 8 to 15 percent slopes, very stony—45 percent

Old Camp gravelly loam, 8 to 15 percent slopes—25 percent

Old Camp very gravelly loam, 15 to 30 percent slopes—20 percent

*Contrasting inclusions:*

Xerollic Camborthids, coarse-loamy, mixed, mesic, 2 to 8 percent slopes—6 percent

Xerollic Haplargids, fine, montmorillonitic, mesic, 8 to 30 percent slopes—4 percent

#### **Characteristics of the Newpass Soil**

*Classification:* Haploxerollic Nadurargids, fine, montmorillonitic, mesic

*Positions on landscape:* North-facing side slopes of foothills

*Parent material:* Residuum derived from volcanic and metavolcanic rock

*Slope:* 8 to 15 percent

*Elevation:* 6,000 to 7,200 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, Thurber needlegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 2 percent stones and boulders, 10 percent cobbles, 75 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Very gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 4 to 14 inches

*Texture:* Clay

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Moderately alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

*Depth:* 14 to 24 inches

*Texture:* Very cobbly silty clay, very gravelly clay, gravelly clay

*Structure:* Subangular blocky

*Consistence:* Hard, firm

*Reaction:* Strongly alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

*Depth:* 24 to 26 inches

*Material:* Cemented hardpan

*Depth:* 26 inches

*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to the hardpan:* 20 to 29 inches

*Depth to bedrock:* 21 to 36 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 2.6 to 3.2 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Medium

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.15; T value—2; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

#### **Characteristics of the Old Camp Soil, Strongly Sloping**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Summits and shoulder slopes of foothills

*Parent material:* Residuum that is derived from basalt and andesite and includes some volcanic ash

*Slope:* 8 to 15 percent

*Elevation:* 6,000 to 7,200 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, Thurber needlegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 50 percent pebbles

*Depth:* 0 to 2 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 2 to 11 inches

*Texture:* Very gravelly loam, very cobbly clay loam

*Structure:* Angular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 11 inches

*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.2 to 1.6 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Old Camp Soil, Moderately Steep**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* South-facing side slopes of foothills

*Parent material:* Residuum that is derived from basalt and andesite and includes some volcanic ash

*Slope:* 15 to 30 percent

*Elevation:* 6,000 to 7,200 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Bluegrass, Thurber needlegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 50 percent pebbles

*Depth:* 0 to 2 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 2 to 11 inches

*Texture:* Very gravelly loam, very cobbly clay loam

*Structure:* Angular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 11 inches

*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.1 to 1.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Xerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Channel banks, narrow inset fans

*Distinctive present vegetation:* Basin big sagebrush, basin wildrye, bluegrass

##### **Inclusion 2**

*Classification:* Xerollic Haplargids, fine, montmorillonitic, mesic

*Positions on landscape:* Concave shoulder slopes of foothills

*Distinctive present vegetation:* Singleleaf pinyon, Utah juniper, Wyoming big sagebrush, pine bluegrass

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Newpass Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

##### **Old Camp Soil, Strongly Sloping**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

##### **Old Camp Soil, Moderately Steep**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### ***Suitability and Limitations for Selected Uses***

#### **Newpass Soil**

*Range seeding:* Poor—rooting depth, small stones, excess sodium

*Roadfill:* Poor—depth to rock, shrink-swell, low strength

*Topsoil:* Poor—too clayey, small stones, excess sodium

*Daily cover for landfill:* Poor—depth to rock, hard to pack, large stones

*Shallow excavations:* Severe—depth to rock

*Local roads and streets:* Severe—shrink-swell, low strength

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Old Camp Soil, Strongly Sloping**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones

*Daily cover for landfill:* Poor—depth to rock, small stones

*Shallow excavations:* Severe—depth to rock

*Local roads and streets:* Severe—depth to rock

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Old Camp Soil, Moderately Steep**

*Range seeding:* Poor—small stones, droughty

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### ***Interpretive Groups***

*Land capability classification:* Newpass and Old Camp soils—VIIIs, nonirrigated

*Range site:* Newpass soil—027X008N; Old Camp soils—027X007N; Inclusion 1—024X006N; Inclusion 2—025X062N

### **360—Eastwell-Blackhawk-Pineval association**

*Positions on landscape:* Fan piedmonts

### ***Composition***

#### ***Major components:***

Eastwell gravelly loam, 4 to 15 percent slopes—45 percent

Blackhawk very fine sandy loam, 2 to 8 percent slopes—25 percent

Pineval gravelly loam, 15 to 30 percent slopes—20 percent

#### ***Contrasting inclusions:***

Durixerollic Haplargids, coarse-loamy, mixed, mesic, 4 to 8 percent slopes—6 percent

Xerollic Durorthids, loamy, mixed, mesic, shallow, 8 to 15 percent slopes—4 percent

### ***Characteristics of the Eastwell Soil***

*Classification:* Haploxerollic Durorthids, loamy-skeletal, mixed, mesic, shallow

*Positions on landscape:* The highest summits and shoulder slopes of fan piedmont remnants

*Parent material:* Mixed alluvium that includes loess

*Slope:* 4 to 15 percent

*Elevation:* 5,500 to 6,500 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Indian ricegrass, bluegrass, black sagebrush

### ***Typical Profile***

*Depth:* 0 to 5 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 5 to 15 inches

*Texture:* Very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 15 to 17 inches

*Material:* Cemented hardpan

*Structure:* Massive

*Consistence:* Very hard, very firm

*Depth:* 17 to 60 inches

*Texture:* Very gravelly loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

**Soil and Water Features**

*Depth to the hardpan:* 10 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 1.5 to 3.5 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.32; T value—2; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

**Characteristics of the Blackhawk Soil**

*Classification:* Entic Durorthids, loamy, mixed, mesic, shallow  
*Positions on landscape:* The lower summits of fan piedmont remnants  
*Parent material:* Loess over mixed alluvium  
*Slope:* 2 to 8 percent  
*Elevation:* 5,500 to 6,000 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 47 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

**Typical Profile**

*Depth:* 0 to 3 inches  
*Texture:* Very fine sandy loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 3 to 14 inches  
*Texture:* Loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 14 to 30 inches  
*Material:* Cemented hardpan  
*Structure:* Massive  
*Consistence:* Extremely hard, extremely firm  
*Depth:* 30 to 48 inches  
*Texture:* Loam  
*Structure:* Massive  
*Consistence:* Slightly hard, very friable  
*Reaction:* Very strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

*Depth:* 48 to 60

*Texture:* Stratified very gravelly sandy loam to extremely gravelly coarse sand

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 8 to 15 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

**Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 2.2 to 2.7 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.43; T value—1; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

**Characteristics of the Pineval Soil**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Side slopes of fan piedmont remnants  
*Parent material:* Mixed alluvium  
*Slope:* 15 to 30 percent  
*Elevation:* 5,500 to 6,500 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

**Typical Profile**

*Rock fragments on surface:* 10 percent pebbles  
*Depth:* 0 to 5 inches  
*Texture:* Gravelly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 5 to 11 inches  
*Texture:* Very gravelly loam, very gravelly clay loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 11 to 60 inches

*Texture:* Extremely gravelly sandy loam, extremely gravelly loamy sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 3.2 to 4.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.28; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durixerollic Haplargids, coarse-loamy, mixed, mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Wyoming big sagebrush, pine bluegrass

#### **Inclusion 2**

*Classification:* Xerollic Durorthids, loamy, mixed, mesic, shallow

*Positions on landscape:* Convex, south-facing shoulder slopes of fan piedmont remnants

*Distinctive present vegetation:* Singleleaf pinyon, Utah juniper, Wyoming big sagebrush, pine bluegrass

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Eastwell Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Blackhawk Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

#### **Pineval Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Eastwell Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Fair—large stones

*Topsoil:* Poor—cemented pan, small stones, area reclaim

*Daily cover for landfill:* Poor—cemented pan, small stones

*Shallow excavations:* Severe—cemented pan

*Local roads and streets:* Moderate—cemented pan, slope, large stones

*Pond reservoir areas:* Severe—seepage, cemented pan, slope

*Embankments, dikes, and levees:* Moderate—piping, large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Blackhawk Soil**

*Range seeding:* Poor—too arid, droughty

*Roadfill:* Good

*Topsoil:* Poor—cemented pan, area reclaim

*Daily cover for landfill:* Poor—cemented pan

*Shallow excavations:* Severe—cemented pan, cutbanks cave

*Local roads and streets:* Moderate—cemented pan

*Pond reservoir areas:* Severe—seepage, cemented pan

*Embankments, dikes, and levees:* Severe—seepage, excess salt

*Sand:* Probable source

*Gravel:* Probable source

#### **Pineval Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Fair—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

### **Interpretive Groups**

*Land capability classification:* Eastwell soil—VIIIs, nonirrigated; Blackhawk soil—IVe, irrigated, and VIIIs, nonirrigated; Pineval soil—VIe, nonirrigated

*Range site:* Eastwell soil—027X032N; Blackhawk soil—024X002N; Pineval soil—027X008N; Inclusions 1 and 2—027X008N

**404—Glean-Gando association***Positions on landscape:* Mountains***Composition****Major components:*

Glean very gravelly loam, 50 to 75 percent slopes—50 percent

Gando very cobbly loam, 50 to 75 percent slopes—35 percent

*Contrasting inclusions:*

Rock outcrop and rubble land—8 percent

Welch loam, drained, 8 to 15 percent slopes—3 percent

Welch loam, 8 to 15 percent slopes—2 percent

Lithic Cryoborolls, 15 to 50 percent slopes—2 percent

***Characteristics of the Glean Soil****Classification:* Pachic Haploxerolls, loamy-skeletal, mixed, frigid*Positions on landscape:* Concave, north-facing side slopes of mountains*Parent material:* Colluvium derived from various kinds of rock*Slope:* 50 to 75 percent*Elevation:* 7,000 to 8,000 feet*Average annual precipitation:* About 14 inches*Average annual air temperature:* About 45 degrees F*Frost-free season:* About 80 days*Dominant present vegetation:* Bluebunch wheatgrass, Idaho fescue, mountain big sagebrush, serviceberry***Typical Profile****Rock fragments on surface:* 20 percent pebbles*Depth:* 0 to 6 inches*Texture:* Very gravelly loam*Structure:* Subangular blocky*Consistence:* Slightly hard, very friable*Reaction:* Neutral*Depth:* 6 to 39 inches*Texture:* Very gravelly sandy loam, very gravelly loam*Structure:* Subangular blocky*Consistence:* Slightly hard, very friable*Reaction:* Neutral*Depth:* 39 to 51 inches*Texture:* Very gravelly sandy loam*Structure:* Massive*Consistence:* Soft, very friable*Reaction:* Neutral*Depth:* 51 inches*Material:* Unweathered bedrock***Soil and Water Features****Depth to bedrock:* 40 to 60 inches*Depth to a seasonal high water table:* More than 60 inches*Frequency of flooding:* None*Permeability:* Moderately rapid*Available water capacity:* 3 to 5 inches*Water-supplying capacity:* 14 inches*Runoff:* Rapid*Hydrologic group:* B*Erosion factors (upper layer):* K value—0.10; T value—3; wind erodibility group—8*Hazard of erosion:* By water—slight; by wind—slight*Shrink-swell potential:* Low*Corrosivity:* To steel—moderate; to concrete—low*Potential for frost action:* Moderate***Characteristics of the Gando Soil****Classification:* Lithic Haploxerolls, loamy-skeletal, mixed, frigid*Positions on landscape:* Crests and ridges of mountains*Parent material:* Residuum derived from sedimentary rock*Slope:* 50 to 75 percent*Elevation:* 6,500 to 8,000 feet*Average annual precipitation:* About 16 inches*Average annual air temperature:* About 42 degrees F*Frost-free season:* About 80 days*Dominant present vegetation:* Bluegrass, Idaho fescue, low sagebrush, black sagebrush***Typical Profile****Rock fragments on surface:* 10 percent cobbles, 20 percent pebbles*Depth:* 0 to 4 inches*Texture:* Very cobbly loam*Structure:* Granular*Consistence:* Soft, very friable*Reaction:* Mildly alkaline*Depth:* 4 to 10 inches*Texture:* Very gravelly loam, extremely gravelly loam*Structure:* Granular*Consistence:* Soft, very friable*Reaction:* Mildly alkaline*Depth:* 10 inches*Material:* Unweathered bedrock***Soil and Water Features****Depth to bedrock:* 10 to 20 inches*Depth to a seasonal high water table:* More than 60 inches*Frequency of flooding:* None*Permeability:* Moderate*Available water capacity:* 1.1 to 1.5 inches*Water-supplying capacity:* 10 inches*Runoff:* Rapid*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.20; T value—1;  
wind erodibility group—8  
*Hazard of erosion:* By water—severe; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Positions on landscape:* Scattered peaks and screes on side slopes

*Distinctive present vegetation:* None

#### **Inclusion 2**

*Classification:* Cumulic Haplaquolls, fine-loamy, mixed, frigid

*Positions on landscape:* Entrenched narrow drainageways

*Distinctive present vegetation:* Basin big sagebrush, basin wildrye

#### **Inclusion 3**

*Classification:* Cumulic Haplaquolls, fine-loamy, mixed, frigid

*Positions on landscape:* Narrow drainageways, canyon bottoms

*Distinctive present vegetation:* Willow, sedge, tufted hairgrass

#### **Inclusion 4**

*Classification:* Lithic Cryoborolls

*Positions on landscape:* Convex, windswept, north-facing crests on mountains

*Distinctive present vegetation:* Low sagebrush, Idaho fescue

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Glean Soil**

*Wild herbaceous plants (nonirrigated):* Good

*Shrubs (nonirrigated):* Good

#### **Gando Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Glean Soil**

*Range seeding:* Poor—small stones

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Gando Soil**

*Range seeding:* Poor—droughty, large stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Glean and Gando soils—VIIIs, nonirrigated

*Range site:* Glean soil—024X023N; Gando soil—028B034N; Inclusion 1—none; Inclusion 2—028B024N; Inclusion 3—025X005N; Inclusion 4—028B038N

## **441—Gund-Umberland association**

*Positions on landscape:* Bolson floors

### **Composition**

*Major components:*

Gund silt loam, 0 to 2 percent slopes—50 percent

Umberland silt loam, 0 to 2 percent slopes—35 percent

*Contrasting inclusions:*

Aquic Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—8 percent

Wendane silt loam, frequently flooded, 0 to 2 percent slopes—4 percent

Playas—3 percent

### **Characteristics of the Gund Soil**

*Classification:* Aquic Durorthidic Torriorthents, fine-silty over clayey, mixed, nonacid, mesic

*Positions on landscape:* The upper lake plain remnants

*Parent material:* Silty alluvium derived from loess and volcanic ash over lake sediment

*Slope:* 0 to 2 percent

*Elevation:* 5,600 to 5,700 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Basin wildrye, basin big sagebrush, black greasewood, rubber rabbitbrush

### **Typical Profile**

*Depth:* 0 to 4 inches

*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 16 to 30 millimhos per centimeter  
*Sodicity (SAR):* 10 to 25

*Depth:* 4 to 23 inches  
*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Hard, firm  
*Reaction:* Moderately alkaline  
*Salinity:* 16 to 30 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46

*Depth:* 23 to 60 inches  
*Texture:* Silty clay, clay  
*Structure:* Massive  
*Consistence:* Hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 8 to 15 millimhos per centimeter  
*Sodicity (SAR):* 46 to 60

#### **Soil and Water Features**

*Depth to a seasonal high water table:* 36\*to 42 inches  
*Frequency of flooding:* Rare  
*Permeability:* Slow  
*Available water capacity:* 9 to 11 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Very slow  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.49; T value—5;  
 wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* High  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* High

#### **Characteristics of the Umlerland Soil**

*Classification:* Aeris Halaquepts, fine, montmorillonitic  
 (calcareous), mesic  
*Positions on landscape:* The lower lake plain remnants  
*Parent material:* Silty lacustrine sediment derived from  
 various kinds of rock  
*Slope:* 0 to 2 percent  
*Elevation:* 5,600 to 5,700 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 130 days  
*Dominant present vegetation:* Black greasewood, rubber  
 rabbitbrush, Indian ricegrass, shadscale, bud  
 sagebrush

#### **Typical Profile**

*Depth:* 0 to 7 inches  
*Texture:* Silt loam

*Structure:* Granular  
*Consistence:* Slightly hard, friable  
*Reaction:* Very strongly alkaline  
*Salinity:* 16 to 30 millimhos per centimeter  
*Sodicity (SAR):* 30 to 50

*Depth:* 7 to 60 inches  
*Texture:* Clay, silty clay, silty clay loam  
*Structure:* Angular blocky  
*Consistence:* Hard, firm  
*Reaction:* Very strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 20 to 46

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60  
 inches  
*Frequency of flooding:* None  
*Permeability:* Very slow  
*Available water capacity:* 9 to 11 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Very slow  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.43; T value—5;  
 wind erodibility group—4L  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* High  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* High

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Aquic Durorthidic Torriorthents, fine-silty,  
 mixed (calcareous), mesic  
*Positions on landscape:* The highest lake plain remnants  
*Distinctive present vegetation:* Black greasewood, Indian  
 ricegrass

##### **Inclusion 2**

*Classification:* Aeris Halaquepts, fine-silty, mixed  
 (calcareous), mesic  
*Positions on landscape:* Lake plain margins  
*Distinctive present vegetation:* Black greasewood, basin  
 wildrye, rubber rabbitbrush

##### **Inclusion 3**

*Positions on landscape:* Dry lake extensions; isolated,  
 irregularly shaped sink areas  
*Distinctive present vegetation:* None

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Gund Soil**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor



*Wetland plants:* Very poor

*Shallow water areas:* Fair

### **Umbreland Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

### **Suitability and Limitations for Selected Uses**

#### **Gund Soil**

*Range seeding:* Poor—excess salt, excess sodium

*Roadfill:* Poor—low strength, shrink-swell

*Topsoil:* Poor—excess salt, excess sodium

*Daily cover for landfill:* Poor—too clayey, hard to pack, excess salt

*Shallow excavations:* Moderate—too clayey, wetness

*Local roads and streets:* Severe—low strength, frost action, shrink-swell

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Umbreland Soil**

*Range seeding:* Poor—excess salt, excess sodium, too crusty

*Roadfill:* Poor—low strength, shrink-swell

*Topsoil:* Poor—excess salt, excess sodium, too clayey

*Daily cover for landfill:* Poor—too clayey, hard to pack, excess sodium

*Shallow excavations:* Moderate—too clayey, wetness

*Local roads and streets:* Severe—low strength, frost action, shrink-swell

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Gund soil—VIIw, nonirrigated; Umbreland soil—VIIs, nonirrigated

*Range site:* Gund soil—024X006N; Umbreland soil—024X003N; Inclusion 1—024X008N; Inclusion 2—024X007N; Inclusion 3—none

### **442—Gund-Bubus-Wendane association**

*Positions on landscape:* Bolson floors

### **Composition**

*Major components:*

Gund silt loam, strongly saline-alkali, drained, 0 to 2 percent slopes—35 percent

Bubus very fine sandy loam, 0 to 2 percent slopes—30 percent

Wendane silt loam, frequently flooded, 0 to 2 percent slopes—20 percent

*Contrasting inclusions:*

Aquic Torriorthents, fine-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—7 percent

Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic, 0 to 2 percent slopes—4 percent

Wendane silt loam, occasionally flooded, 0 to 2 percent slopes—4 percent

### **Characteristics of the Gund Soil**

*Classification:* Aquic Durorthidic Torriorthents, fine-silty over clayey, mixed, nonacid, mesic

*Positions on landscape:* Lake plain terraces

*Parent material:* Silty alluvium derived from loess and volcanic ash over lake sediment

*Slope:* 0 to 2 percent

*Elevation:* 5,600 to 5,800 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Basin wildrye, black greasewood, rubber rabbitbrush

### **Typical Profile**

*Depth:* 0 to 4 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 75 to 99 millimhos per centimeter

*Sodicity (SAR):* 10 to 25

*Depth:* 4 to 23 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Hard, firm

*Reaction:* Moderately alkaline

*Salinity:* 15 to 30 millimhos per centimeter

*Sodicity (SAR):* 50 to 80

*Depth:* 23 to 60 inches

*Texture:* Silty clay, clay

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

### **Soil and Water Features**

*Depth to a seasonal high water table:* 60 to 72 inches

*Frequency of flooding:* Rare

*Permeability:* Slow

*Available water capacity:* 8.6 to 11.0 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Very slow

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.49; T value—5;

wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* High

### **Characteristics of the Bubus Soil**

*Classification:* Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic

*Positions on landscape:* Alluvial flat remnants

*Parent material:* Mixed alluvium that is high in content of pyroclastic material

*Slope:* 0 to 2 percent

*Elevation:* 5,600 to 5,800 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Shadscale, black greasewood, bottlebrush squirreltail

### **Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Very fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

*Depth:* 6 to 60 inches

*Texture:* Stratified sandy loam to silt loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 9 to 10 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.49; T value—5; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

### **Characteristics of the Wendane Soil**

*Classification:* Aeris Halaquepts, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Alluvial flats

*Parent material:* Silty alluvium derived from volcanic rock, tuff, loess, and volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 5,600 to 5,800 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Black greasewood, basin wildrye

### **Typical Profile**

*Depth:* 0 to 7 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 30 to 50 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

*Depth:* 7 to 18 inches

*Texture:* Silt loam, very fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

*Depth:* 18 to 60 inches

*Texture:* Stratified silt loam to clay loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 25 to 40

### **Soil and Water Features**

*Depth to a seasonal high water table:* 30 to 48 inches

*Frequency of flooding:* Frequent for brief to long periods in February through June

*Permeability:* Moderately slow

*Available water capacity:* 11 to 13 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Very slow

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—4L

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* High

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Aquic Torriorthents, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Adjacent inset fans

*Distinctive present vegetation:* Basin big sagebrush, black greasewood

#### **Inclusion 2**

*Classification:* Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic

*Positions on landscape:* Shorelines, offshore bars

*Distinctive present vegetation:* Black greasewood, shadscale

#### **Inclusion 3**

*Classification:* Aeris Halaquepts, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* The lower lake plains

*Distinctive present vegetation:* Black greasewood

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Gund Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

*Wetland plants:* Very poor

*Shallow water areas:* Fair

#### **Bubus Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Wendane Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

### **Suitability and Limitations for Selected Uses**

#### **Gund Soil**

*Range seeding:* Poor—excess salt, excess sodium

*Roadfill:* Poor—low strength, shrink-swell

*Topsoil:* Poor—excess salt, excess sodium

*Daily cover for landfill:* Poor—too clayey, hard to pack, excess salt

*Shallow excavations:* Moderate—too clayey, wetness

*Local roads and streets:* Severe—low strength, frost action, shrink-swell

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Bubus Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium

*Roadfill:* Good

*Topsoil:* Poor—excess salt

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Slight

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping, excess salt

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Wendane Soil**

*Range seeding:* Poor—excess salt, excess sodium

*Roadfill:* Poor—low strength

*Topsoil:* Poor—excess salt, excess sodium

*Daily cover for landfill:* Poor—excess salt, excess sodium

*Shallow excavations:* Moderate—wetness, flooding

*Local roads and streets:* Severe—flooding, frost action

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Gund and Wendane soils—VIIw, nonirrigated; Bubus soil—VIIc, nonirrigated

*Range site:* Gund soil—024X008N; Bubus soil—024X003N; Wendane soil—024X007N; Inclusion 1—024X006N; Inclusion 2—024X008N; Inclusion 3—024X011N

## **443—Gund-Batan association**

*Positions on landscape:* Bolson floors

### **Composition**

*Major components:*

Gund silt loam, strongly saline-alkali, drained, 0 to 2 percent slopes—65 percent

Batan silt loam, 0 to 2 percent slopes—25 percent

*Contrasting inclusions:*

Aeric Halaquepts, fine, montmorillonitic, mesic, 0 to 2 percent slopes—5 percent

Wendane silt loam, frequently flooded, 0 to 2 percent slopes—3 percent

Ocala Variant silt loam, 0 to 2 percent slopes—2 percent

### **Characteristics of the Gund Soil**

*Classification:* Aquic Durorthidic Torriorthents, fine-silty over clayey, mixed, nonacid, mesic

*Positions on landscape:* Lake plain terraces

*Parent material:* Silty alluvium derived from loess and volcanic ash over lake sediment

*Slope:* 0 to 2 percent

*Elevation:* 5,600 to 5,700 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Basin wildrye, black greasewood, rubber rabbitbrush

#### **Typical Profile**

*Depth:* 0 to 4 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 75 to 100 millimhos per centimeter

*Sodicity (SAR):* 10 to 25

*Depth:* 4 to 23 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Hard, firm

*Reaction:* Moderately alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 50 to 80

*Depth:* 23 to 60 inches

*Texture:* Silty clay, clay

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

#### **Soil and Water Features**

*Depth to a seasonal high water table:* 60 to 72 inches

*Frequency of flooding:* Rare

*Permeability:* Slow

*Available water capacity:* 8.6 to 11.0 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Very slow

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.49; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* High

#### **Characteristics of the Batan Soil**

*Classification:* Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Alluvial flat remnants

*Parent material:* Silty alluvium that is high in content of loess and pyroclastic material

*Slope:* 0 to 2 percent

*Elevation:* 5,600 to 5,700 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Shadscale, black greasewood, bottlebrush squirreltail

#### **Typical Profile**

*Depth:* 0 to 5 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 20 to 40 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

*Depth:* 5 to 68 inches

*Texture:* Stratified silt loam to silty clay loam

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 11 to 12 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—4L

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Aeris Halaquepts, fine, montmorillonitic, mesic

*Positions on landscape:* Ponded lake plains

*Distinctive present vegetation:* Black greasewood

##### **Inclusion 2**

*Classification:* Aeris Halaquepts, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Channeled lake plains

*Distinctive present vegetation:* Black greasewood, basin wildrye, rubber rabbitbrush

##### **Inclusion 3**

*Classification:* Aeris Halaquepts, fine, montmorillonitic, mesic

*Positions on landscape:* Lake plains that have a static water table

*Distinctive present vegetation:* Alkali rabbitbrush, alkaligrass

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Gund Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

*Wetland plants:* Very poor

*Shallow water areas:* Fair

#### **Batan Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

### **Suitability and Limitations for Selected Uses**

#### **Gund Soil**

*Range seeding:* Poor—excess salt, excess sodium

*Roadfill:* Poor—low strength, shrink-swell

*Topsoil:* Poor—excess salt, excess sodium

*Daily cover for landfill:* Poor—too clayey, hard to pack, excess salt

*Shallow excavations:* Moderate—too clayey, wetness

*Local roads and streets:* Severe—low strength, frost action, shrink-swell

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Batan Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium

*Roadfill:* Poor—low strength

*Topsoil:* Poor—excess salt, excess sodium

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Severe—low strength

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Restrictive Features for Selected Practices**

#### **Batan Soil**

*Drainage:* Deep to water

*Irrigation:* Excess salt, excess sodium

*Terraces and diversions:* Erodes easily

### **Interpretive Groups**

*Land capability classification:* Gund soil—VIIw,

nonirrigated; Batan soil—VIIs, nonirrigated

*Range site:* Gund soil—024X008N; Batan soil—024X003N; Inclusion 1—024X011N; Inclusion 2—024X007N; Inclusion 3—024X044N

## **444—Gund association**

*Positions on landscape:* Lake plains

### **Composition**

*Major components:*

Gund silt loam, 0 to 2 percent slopes—60 percent

Gund silt loam, drained, 0 to 2 percent slopes—25 percent

*Contrasting inclusions:*

Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic, 0 to 2 percent slopes—5 percent

Orovada fine sandy loam, 0 to 2 percent slopes—5 percent

Wendane silt loam, frequently flooded, 0 to 2 percent slopes—5 percent

### **Characteristics of the Gund Soil**

*Classification:* Aquic Durorthidic Torriorthents, fine-silty over clayey, mixed, nonacid, mesic

*Positions on landscape:* The lower lake plains

*Parent material:* Silty alluvium derived from loess and volcanic ash over lake sediment

*Slope:* 0 to 2 percent

*Elevation:* 5,700 to 5,800 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Basin wildrye, black greasewood, basin big sagebrush, western wheatgrass

### **Typical Profile**

*Depth:* 0 to 4 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 10 to 25

*Depth:* 4 to 23 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Hard, firm

*Reaction:* Moderately alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

*Depth:* 23 to 60 inches

*Texture:* Silty clay, clay

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

#### **Soil and Water Features**

*Depth to a seasonal high water table:* 36 to 42 inches

*Frequency of flooding:* Rare

*Permeability:* Slow

*Available water capacity:* 8.6 to 11.0 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Very slow

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.49; T value—5;  
wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* High

#### **Characteristics of the Gund Soil, Drained**

*Classification:* Aquic Durorthidic Torriorthents, fine-silty  
over clayey, mixed, nonacid, mesic

*Positions on landscape:* The higher lake plains

*Parent material:* Silty alluvium derived from loess and  
volcanic ash over lake sediment

*Slope:* 0 to 2 percent

*Elevation:* 5,700 to 5,800 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Black greasewood, basin  
wildrye, seepweed

#### **Typical Profile**

*Depth:* 0 to 4 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 75 to 100 millimhos per centimeter

*Sodicity (SAR):* 10 to 25

*Depth:* 4 to 23 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Hard, firm

*Reaction:* Moderately alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 50 to 80

*Depth:* 23 to 60 inches

*Texture:* Silty clay, clay

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

#### **Soil and Water Features**

*Depth to a seasonal high water table:* 60 to 72 inches

*Frequency of flooding:* Rare

*Permeability:* Very slow

*Available water capacity:* 8.6 to 11.0 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.49; T value—5;  
wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* High

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Durorthidic Torriorthents, coarse-loamy,  
mixed (calcareous), mesic

*Positions on landscape:* Dissected lake plains

*Distinctive present vegetation:* Wyoming big sagebrush,  
black greasewood

##### **Inclusion 2**

*Classification:* Durixerollic Camborthids, coarse-loamy,  
mixed, mesic

*Positions on landscape:* Adjacent fan skirts

*Distinctive present vegetation:* Wyoming big sagebrush,  
Indian ricegrass, bluegrass

##### **Inclusion 3**

*Classification:* Aeris Halaquepts, fine-silty, mixed  
(calcareous), mesic

*Positions on landscape:* Channeled, lower lake plains

*Distinctive present vegetation:* Black greasewood, rubber  
rabbitbrush, basin wildrye

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Gund Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

*Wetland plants:* Very poor

*Shallow water areas:* Fair

##### **Gund Soil, Drained**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

*Wetland plants:* Very poor

*Shallow water areas:* Fair

### ***Suitability and Limitations for Selected Uses***

#### **Gund Soil**

*Range seeding:* Poor—excess salt, excess sodium

*Roadfill:* Poor—low strength, shrink-swell

*Topsoil:* Poor—excess salt, excess sodium

*Daily cover for landfill:* Poor—too clayey, hard to pack, excess salt

*Shallow excavations:* Moderate—too clayey, wetness

*Local roads and streets:* Severe—low strength, frost action, shrink-swell

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Gund Soil, Drained**

*Range seeding:* Poor—excess salt, excess sodium

*Roadfill:* Poor—low strength, shrink-swell

*Topsoil:* Poor—excess salt, excess sodium

*Daily cover for landfill:* Poor—too clayey, hard to pack, excess salt

*Shallow excavations:* Moderate—too clayey, wetness

*Local roads and streets:* Severe—low strength, frost action, shrink-swell

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### ***Interpretive Groups***

*Land capability classification:* Gund soils—VIIw, nonirrigated

*Range site:* Gund soil—024X006N; Gund soil, drained—024X008N; Inclusion 1—024X022N; Inclusion 2—028B010N; Inclusion 3—024X007N

### **461—Hapgood-Packer-Layview association**

*Positions on landscape:* Mountains

#### ***Composition***

*Major components:*

Hapgood very gravelly loam, 30 to 50 percent slopes—40 percent

Packer extremely gravelly loam, 15 to 50 percent slopes—25 percent

Layview very gravelly sandy loam, 8 to 15 percent slopes—15 percent

*Contrasting inclusions:*

Entic Cryobrepts, loamy-skeletal, mixed, 30 to 50 percent slopes—8 percent

Rock outcrop and Rubble land—7 percent

Argic Cryoborolls, loamy-skeletal, mixed, 15 to 30 percent slopes—4 percent

Hackwood bouldery loam, 30 to 50 percent slopes—1 percent

### ***Characteristics of the Hapgood Soil***

*Classification:* Pachic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* Concave back slopes of mountains

*Parent material:* Colluvium that includes loess and volcanic ash

*Slope:* 30 to 50 percent

*Elevation:* 8,000 to 9,800 feet

*Average annual precipitation:* About 16 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 50 days

*Dominant present vegetation:* Idaho fescue, mountain brome, bluegrass, mountain big sagebrush, serviceberry

#### **Typical Profile**

*Rock fragments on surface:* 10 percent pebbles

*Depth:* 0 to 17 inches

*Texture:* Very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 17 to 40 inches

*Texture:* Very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 40 to 60 inches

*Texture:* Very cobbly loam, very gravelly loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Neutral

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 4.8 to 6.0 inches

*Water-supplying capacity:* 16 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.10; T value—5; wind erodibility group—7

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

**Characteristics of the Packer Soil**

*Classification:* Argic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* Convex, windswept shoulder slopes and upper side slopes of mountains

*Parent material:* Mixed residuum that includes loess and volcanic ash

*Slope:* 15 to 50 percent

*Elevation:* 8,000 to 9,800 feet

*Average annual precipitation:* About 15 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 50 days

*Dominant present vegetation:* Idaho fescue, bluegrass, low sagebrush, black sagebrush

**Typical Profile**

*Depth:* 0 to 10 inches

*Texture:* Extremely gravelly loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 10 to 21 inches

*Texture:* Extremely cobbly clay loam, extremely cobbly loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 21 to 60 inches

*Texture:* Extremely cobbly sandy loam, extremely cobbly loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Neutral

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 3.6 to 5.4 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.10; T value—3; wind erodibility group—8

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

**Characteristics of the Layview Soil**

*Classification:* Argic Lithic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* Convex, windswept crests of mountains

*Parent material:* Residuum derived from andesite, rhyolite, and tuff

*Slope:* 8 to 15 percent

*Elevation:* 8,500 to 9,800 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 50 days

*Dominant present vegetation:* Idaho fescue, bluegrass, low sagebrush, black sagebrush

**Typical Profile**

*Rock fragments on surface:* 25 percent cobbles, 50 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Very gravelly sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 3 to 12 inches

*Texture:* Very gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 12 inches

*Material:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 10 to 14 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 0.8 to 1.2 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—1; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

**Contrasting Inclusions****Inclusion 1**

*Classification:* Entic Cryumbrepts, loamy-skeletal, mixed

*Positions on landscape:* Concave snow pockets below the ridgeline

*Distinctive present vegetation:* Lupine, Letterman needlegrass

**Inclusion 2**

*Positions on landscape:* Scattered peaks, rimrock, stripes below areas of Rock outcrop

*Distinctive present vegetation:* None



**Inclusion 3**

*Classification:* Argic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* Concave back slopes of mountains

*Distinctive present vegetation:* Low sagebrush, Idaho fescue

**Inclusion 4**

*Classification:* Pachic Cryoborolls, fine-loamy, mixed

*Positions on landscape:* Concave snow pockets

*Distinctive present vegetation:* Quaking aspen

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Hapgood Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Packer Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Layview Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses****Hapgood Soil**

*Range seeding:* Poor—small stones

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Packer Soil**

*Range seeding:* Poor—small stones

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage, large stones

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

**Layview Soil**

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones

*Daily cover for landfill:* Poor—depth to rock, small stones

*Shallow excavations:* Severe—depth to rock

*Local roads and streets:* Severe—depth to rock

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Hapgood, Packer, and

Layview soils—VIIIs, nonirrigated

*Range site:* Hapgood soil—024X032N; Packer and

Layview soils—024X016N; Inclusion 1—025X028N;

Inclusion 2—none; Inclusion 3—024X027N;

Inclusion 4—025X065N

**463—Hapgood-Packer-Rubble land association**

*Positions on landscape:* Mountains

**Composition**

*Major components:*

Hapgood gravelly loam, 50 to 75 percent slopes—45 percent

Packer extremely cobbly sandy loam, 30 to 50 percent slopes—20 percent

Rubble land—20 percent

*Contrasting inclusions:*

Layview very cobbly loam, 8 to 30 percent slopes—6 percent

Walti very cobbly loam, 15 to 30 percent slopes—5 percent

Pachic Cryoborolls, loamy-skeletal, mixed, 15 to 30 percent slopes—4 percent

**Characteristics of the Hapgood Soil**

*Classification:* Pachic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* Concave, north-facing side slopes of mountains in areas where snow accumulates

*Parent material:* Colluvium that includes loess and volcanic ash

*Slope:* 50 to 75 percent

*Elevation:* 8,200 to 9,000 feet

*Average annual precipitation:* About 16 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 50 days

*Dominant present vegetation:* Idaho fescue, mountain brome, bluegrass, mountain big sagebrush, serviceberry

**Typical Profile**

*Rock fragments on surface:* 10 percent pebbles

*Depth:* 0 to 17 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 17 to 40 inches

*Texture:* Very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 40 to 60 inches

*Texture:* Very cobbly loam, very gravelly loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Neutral

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 5.8 to 7.4 inches

*Water-supplying capacity:* 16 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

**Characteristics of the Packer Soil**

*Classification:* Argic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* East-, west-, and south-facing side slopes of mountains

*Parent material:* Mixed residuum that includes loess and volcanic ash

*Slope:* 30 to 50 percent

*Elevation:* 7,800 to 9,000 feet

*Average annual precipitation:* About 15 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 50 days

*Dominant present vegetation:* Idaho fescue, bluegrass, low sagebrush, black sagebrush

**Typical Profile**

*Depth:* 0 to 10 inches

*Texture:* Extremely cobbly sandy loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 10 to 21 inches

*Texture:* Extremely cobbly clay loam, extremely cobbly loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 21 to 60 inches

*Texture:* Extremely cobbly sandy loam, extremely cobbly loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Neutral

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 3.6 to 5.4 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.15; T value—5; wind erodibility group—8

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

**Characteristics of the Rubble Land**

*Positions on landscape:* Side slopes below sharp shoulder scarps of mountains

*Slope:* 50 to 75 percent

**Contrasting Inclusions****Inclusion 1**

*Classification:* Argic Lithic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* Crests, shoulder slopes, and convex, upper side slopes of mountains

*Distinctive present vegetation:* Black sagebrush, low sagebrush, Idaho fescue

**Inclusion 2**

*Classification:* Aridic Argixerolls, fine, montmorillonitic, frigid

*Positions on landscape:* Convex, lower side slopes of mountains

*Distinctive present vegetation:* Low sagebrush, Idaho fescue

**Inclusion 3**

*Classification:* Pachic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* Foot slopes below areas on side slopes of mountains where snow accumulates and areas of Rubble land

*Distinctive present vegetation:* Oceanspray, mountain brome

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Hapgood Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Packer Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Hapgood Soil**

*Range seeding:* Poor—erodes easily

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Packer Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Poor—slope, large stones

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope, large stones

*Local roads and streets:* Severe—slope, large stones

*Pond reservoir areas:* Severe—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage, large stones

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

### **Interpretive Groups**

*Land capability classification:* Hapgood soil—VIIe, nonirrigated; Packer soil—VIIs, nonirrigated; Rubble land—VIIIs, nonirrigated

*Range site:* Hapgood soil—024X032N; Packer soil—024X016N; Rubble land—none; Inclusion 1—024X016N; Inclusion 2—024X027N; Inclusion 3—024X034N

## **465—Hapgood-Halacan-Hatur association**

*Positions on landscape:* Mountains

### **Composition**

#### *Major components:*

Hapgood gravelly loam, 30 to 50 percent slopes—55 percent

Halacan very gravelly loam, 8 to 15 percent slopes—20 percent

Hatur very gravelly loam, 30 to 50 percent slopes—15 percent

#### *Contrasting inclusions:*

Crylic Lithic Rendolls, loamy-skeletal, carbonatic, 8 to 30 percent slopes—4 percent

Rock outcrop—3 percent

Cumulic Cryoborolls, fine-loamy, mixed, drained, 2 to 4 percent slopes—2 percent

Rubble land—1 percent

### **Characteristics of the Hapgood Soil**

*Classification:* Pachic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* Concave side slopes of mountains in areas where snow accumulates

*Parent material:* Colluvium that includes loess and volcanic ash

*Slope:* 30 to 50 percent

*Elevation:* 8,800 to 9,500 feet

*Average annual precipitation:* About 16 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 50 days

*Dominant present vegetation:* Idaho fescue, mountain brome, bluegrass, mountain big sagebrush, serviceberry

### **Typical Profile**

*Rock fragments on surface:* 10 percent pebbles

*Depth:* 0 to 17 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 17 to 40 inches

*Texture:* Very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 40 to 60 inches

*Texture:* Very cobbly loam, very gravelly loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Neutral

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 5.8 to 7.4 inches

*Water-supplying capacity:* 16 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.24; T value—5;

wind erodibility group—6

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Halacan Soil**

*Classification:* Cryic Lithic Rendolls, loamy-skeletal, carbonatic

*Positions on landscape:* Crests and shoulder slopes of mountains

*Parent material:* Residuum and colluvium derived from limestone

*Slope:* 8 to 15 percent

*Elevation:* 8,200 to 9,500 feet

*Average annual precipitation:* About 16 inches

*Average annual air temperature:* About 38 degrees F

*Frost-free season:* About 40 days

*Dominant present vegetation:* Idaho fescue, bluegrass, low sagebrush, black sagebrush

### **Typical Profile**

*Rock fragments on surface:* 50 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Depth:* 5 to 17 inches

*Texture:* Extremely channery loam, very channery loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Depth:* 17 inches

*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately rapid

*Available water capacity:* 1.0 to 1.6 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—7

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Hatur Soil**

*Classification:* Cryic Rendolls, loamy-skeletal, carbonatic

*Positions on landscape:* Side slopes of mountains

*Parent material:* Colluvium and residuum derived from limestone

*Slope:* 30 to 50 percent

*Elevation:* 8,000 to 9,300 feet

*Average annual precipitation:* About 16 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 60 days

*Dominant present vegetation:* Idaho fescue, mountain brome, needlegrass, mountain big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 90 percent pebbles

*Depth:* 0 to 14 inches

*Texture:* Very gravelly loam

*Structure:* Granular

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Depth:* 14 to 29 inches

*Texture:* Extremely gravelly loam, extremely gravelly sandy loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Depth:* 29 inches

*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 3.0 to 3.6 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.10; T value—2; wind erodibility group—8

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Cryic Lithic Rendolls, loamy-skeletal, carbonatic

*Positions on landscape:* Windswept crests of mountains  
*Distinctive present vegetation:* Black sagebrush, Idaho fescue

#### **Inclusion 2**

*Positions on landscape:* Scattered peaks  
*Distinctive present vegetation:* None

#### **Inclusion 3**

*Classification:* Cumulic Cryoborolls, fine-loamy, mixed  
*Positions on landscape:* Mountain drainageways, canyon bottoms  
*Distinctive present vegetation:* Basin wildrye, basin big sagebrush, rose, willow

#### **Inclusion 4**

*Positions on landscape:* Side slopes of mountains below areas of Rock outcrop  
*Distinctive present vegetation:* None

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Hapgood Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### **Halacan Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### **Hatur Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Hapgood Soil**

*Range seeding:* Poor—erodes easily  
*Roadfill:* Poor—slope  
*Topsoil:* Poor—small stones, area reclaim, slope  
*Daily cover for landfill:* Poor—small stones, slope  
*Shallow excavations:* Severe—slope  
*Local roads and streets:* Severe—slope  
*Pond reservoir areas:* Severe—slope  
*Embankments, dikes, and levees:* Moderate—large stones

*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Halacan Soil**

*Range seeding:* Poor—droughty, small stones  
*Roadfill:* Poor—depth to rock  
*Topsoil:* Poor—depth to rock, small stones  
*Daily cover for landfill:* Poor—depth to rock, small stones  
*Shallow excavations:* Severe—depth to rock  
*Local roads and streets:* Severe—depth to rock

*Pond reservoir areas:* Severe—depth to rock, slope  
*Embankments, dikes, and levees:* Severe—seepage, large stones  
*Sand:* Improbable source—excess fines, large stones  
*Gravel:* Improbable source—excess fines, large stones

#### **Hatur Soil**

*Range seeding:* Poor—small stones  
*Roadfill:* Poor—depth to rock, slope  
*Topsoil:* Poor—small stones, slope  
*Daily cover for landfill:* Poor—depth to rock, seepage, small stones  
*Shallow excavations:* Severe—depth to rock, slope  
*Local roads and streets:* Severe—slope  
*Pond reservoir areas:* Severe—slope  
*Embankments, dikes, and levees:* Severe—seepage  
*Sand:* Improbable source—small stones  
*Gravel:* Improbable source—thin layer

### **Interpretive Groups**

*Land capability classification:* Hapgood soil—VIIe, nonirrigated; Halacan and Hatur soils—VIIs, nonirrigated  
*Range site:* Hapgood soil—024X032N; Halacan soil—024X016N; Hatur soil—028B029N; Inclusion 1—024X042N; Inclusion 2—none; Inclusion 3—025X003N; Inclusion 4—none

## **491—Enko-Orovada association, gently sloping**

*Positions on landscape:* Piedmont slopes

### **Composition**

#### *Major components:*

Enko sandy loam, 2 to 4 percent slopes—55 percent  
 Orovada fine sandy loam, 2 to 4 percent slopes—30 percent

#### *Contrasting inclusions:*

Pineval gravelly loam, 2 to 4 percent slopes—6 percent  
 Zineb gravelly loam, 2 to 4 percent slopes—5 percent  
 Duric Camborthids, coarse-silty, mixed, mesic, 0 to 2 percent slopes—4 percent

### **Characteristics of the Enko Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Fan skirts  
*Parent material:* Mixed alluvium that includes loess and volcanic ash  
*Slope:* 2 to 4 percent  
*Elevation:* 6,000 to 6,400 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush,  
Indian ricegrass, bottlebrush squirreltail

#### **Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 12 inches

*Texture:* Loam, sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 12 to 18 inches

*Texture:* Sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 18 to 60 inches

*Texture:* Sandy loam, fine sandy loam

*Structure:* Massive

*Consistence:* Hard, firm

*Reaction:* Moderately alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60  
inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 6.1 to 8.2 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Slow

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.43; T value—5;  
wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Orovada Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy,  
mixed, mesic

*Positions on landscape:* Inset fans, margins of fan skirts

*Parent material:* Loess mantle that is high in content of  
volcanic ash over mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 6,000 to 6,400 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush,  
bluegrass, Indian ricegrass

#### **Typical Profile**

*Depth:* 0 to 8 inches

*Texture:* Fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 8 to 20 inches

*Texture:* Fine sandy loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 20 to 60 inches

*Texture:* Stratified fine sandy loam to silt loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60  
inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 8.5 to 10.0 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.43; T value—5;  
wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Durixerollic Haplargids, loamy-skeletal,  
mixed, mesic

*Positions on landscape:* Fan piedmont remnants

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Inclusion 2**

*Classification:* Durixerollic Camborthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Fan drainageways

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Inclusion 3**

*Classification:* Duric Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Inset fans near stream channels

*Distinctive present vegetation:* Annuals

### **Major Uses**

*Current uses:* Livestock grazing, wildlife habitat

*Potential foreseeable use:* Irrigated cropland

### **Suitability for Wildlife Habitat Elements**

#### **Enko Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Orovada Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Enko Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Poor—excess salt

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Orovada Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Fair—small stones, thin layer

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Enko soil—Ile, irrigated, and VIc, nonirrigated; Orovada soil—Ile, irrigated, and VIc, nonirrigated

*Range site:* Enko and Orovada soils—028B010N; Inclusions 1 and 2—028B010N

## **492—Enko-Glyphs association**

*Positions on landscape:* Fan piedmonts

### **Composition**

*Major components:*

Enko sandy loam, gravelly substratum, 0 to 2 percent slopes—60 percent

Glyphs fine sandy loam, 0 to 2 percent slopes—25 percent

*Contrasting inclusions:*

Orovada very fine sandy loam, 0 to 2 percent slopes—9 percent

Orovada gravelly fine sandy loam, gravelly substratum, 0 to 2 percent slopes—6 percent

### **Characteristics of the Enko Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Fan aprons

*Parent material:* Mixed alluvium that includes loess and volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 6,300 to 6,600 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, Indian ricegrass, bottlebrush squirreltail

### **Typical Profile**

*Depth:* 0 to 14 inches

*Texture:* Sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 14 to 53 inches

*Texture:* Loam, sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 53 to 63 inches

*Texture:* Very gravelly loamy sand, extremely gravelly sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Mildly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 6.5 to 8.5 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Slow  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.32; T value—4; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

**Characteristics of the Glyphs Soil**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic  
*Positions on landscape:* Fan piedmont remnants  
*Parent material:* Mixed alluvium that is derived from volcanic rock and includes loess and volcanic ash  
*Slope:* 0 to 2 percent  
*Elevation:* 6,200 to 6,400 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 47 degrees F  
*Frost-free season:* About 100 days  
*Dominant present vegetation:* Indian ricegrass, needleandthread, bluegrass, Wyoming big sagebrush

**Typical Profile**

*Depth:* 0 to 7 inches  
*Texture:* Fine sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 7 to 17 inches  
*Texture:* Gravelly clay loam, gravelly sandy clay loam  
*Structure:* Angular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 17 to 37 inches  
*Texture:* Gravelly sandy loam  
*Structure:* Massive  
*Consistence:* Hard, firm  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 8 millimhos per centimeter  
*Sodicity (SAR):* 2 to 10

*Depth:* 37 to 60 inches  
*Texture:* Very gravelly coarse sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 2 to 10

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow over very rapid  
*Available water capacity:* 4.5 to 7.0 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.28; T value—3; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

**Contrasting Inclusions****Inclusion 1**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Adjacent fan skirts  
*Distinctive present vegetation:* Wyoming big sagebrush

**Inclusion 2**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Inset fans  
*Distinctive present vegetation:* Wyoming big sagebrush

**Major Uses**

*Current uses:* Livestock grazing, wildlife habitat  
*Potential foreseeable use:* Irrigated cropland

**Suitability for Wildlife Habitat Elements****Enko Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

**Glyphs Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses****Enko Soil**

*Range seeding:* Fair—too arid  
*Roadfill:* Good  
*Topsoil:* Fair—small stones, area reclaim  
*Daily cover for landfill:* Fair—thin layer



*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Moderate—frost action  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—piping  
*Sand:* Probable source  
*Gravel:* Probable source

#### **Glyphs Soil**

*Range seeding:* Fair—too arid  
*Roadfill:* Good  
*Topsoil:* Poor—small stones, area reclaim  
*Daily cover for landfill:* Poor—seepage, too sandy, small stones  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Moderate—frost action  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—seepage  
*Sand:* Probable source  
*Gravel:* Probable source

#### **Restrictive Features for Selected Practices**

##### **Enko Soil**

*Drainage:* Deep to water  
*Irrigation:* Percs slowly, soil blowing  
*Terraces and diversions:* Soil blowing

##### **Glyphs Soil**

*Drainage:* Deep to water  
*Irrigation:* Rooting depth, excess salt  
*Terraces and diversions:* Too sandy

#### **Interpretive Groups**

*Land capability classification:* Enko soil—IIs, irrigated, and VIIs, nonirrigated; Glyphs soil—IIIs, irrigated, and VIc, nonirrigated  
*Range site:* Enko and Glyphs soils—028B010N; Inclusions 1 and 2—028B010N

### **493—Enko-Orovada association, nearly level**

*Positions on landscape:* Piedmont slopes

#### **Composition**

*Major components:*  
 Enko sandy loam, 0 to 2 percent slopes—45 percent  
 Orovada fine sandy loam, 0 to 2 percent slopes—40 percent  
*Contrasting inclusions:*  
 Glyphs gravelly fine sandy loam, 0 to 4 percent slopes—5 percent  
 Orovada fine sandy loam, gullied, 0 to 4 percent slopes—5 percent  
 Aridic Haploxerolls, fine-loamy, mixed, mesic, 0 to 2 percent slopes—5 percent

#### **Characteristics of the Enko Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Fan skirts  
*Parent material:* Mixed alluvium that includes loess and volcanic ash  
*Slope:* 0 to 2 percent  
*Elevation:* 6,600 to 6,800 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Wyoming big sagebrush, Indian ricegrass, bottlebrush squirreltail

#### **Typical Profile**

*Depth:* 0 to 6 inches  
*Texture:* Sandy loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Neutral  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 6 to 12 inches  
*Texture:* Loam, sandy loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 12 to 18 inches  
*Texture:* Sandy loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 18 to 60 inches  
*Texture:* Sandy loam, fine sandy loam  
*Structure:* Massive  
*Consistence:* Hard, firm  
*Reaction:* Moderately alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5  
**Soil and Water Features**  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 6 to 9 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Slow  
*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.43; T value—5;  
wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

### **Characteristics of the Orovada Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Inset fans  
*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium  
*Slope:* 0 to 2 percent  
*Elevation:* 6,600 to 6,800 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

### **Typical Profile**

*Depth:* 0 to 8 inches  
*Texture:* Fine sandy loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 8 to 20 inches  
*Texture:* Fine sandy loam, loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 20 to 65 inches  
*Texture:* Stratified fine sandy loam to silt loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* Rare  
*Permeability:* Moderate  
*Available water capacity:* 8 to 10 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Slow  
*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.43; T value—5;  
wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic  
*Positions on landscape:* Fan piedmont remnants  
*Distinctive present vegetation:* Wyoming big sagebrush, needlegrass

#### **Inclusion 2**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Fan drainageways  
*Distinctive present vegetation:* Big sagebrush, rabbitbrush

#### **Inclusion 3**

*Classification:* Aridic Haploxerolls, fine-loamy, mixed, mesic  
*Positions on landscape:* Areas adjacent to active channels  
*Distinctive present vegetation:* Basin big sagebrush, basin wildrye

### **Major Uses**

*Current uses:* Livestock grazing, wildlife habitat  
*Potential foreseeable use:* Irrigated cropland

### **Suitability for Wildlife Habitat Elements**

#### **Enko Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### **Orovada Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Enko Soil**

*Range seeding:* Fair—too arid  
*Roadfill:* Good  
*Topsoil:* Poor—excess salt  
*Daily cover for landfill:* Good  
*Shallow excavations:* Slight  
*Local roads and streets:* Moderate—frost action  
*Pond reservoir areas:* Moderate—seepage  
*Embankments, dikes, and levees:* Severe—piping  
*Sand:* Improbable—excess fines  
*Gravel:* Improbable—excess fines

**Orovada Soil***Range seeding:* Fair—too arid*Roadfill:* Good*Topsoil:* Fair—small stones, thin layer*Daily cover for landfill:* Good*Shallow excavations:* Slight*Local roads and streets:* Moderate—frost action, flooding*Pond reservoir areas:* Moderate—seepage*Embankments, dikes, and levees:* Severe—piping*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines**Restrictive Features for Selected Practices****Enko Soil***Drainage:* Deep to water*Irrigation:* Soil blowing, percs slowly*Terraces and diversions:* Erodes easily, soil blowing**Orovada Soil***Drainage:* Deep to water*Irrigation:* Soil blowing, erodes easily*Terraces and diversions:* Erodes easily, soil blowing**Interpretive Groups***Land capability classification:* Enko soil—IIs, irrigated, and VIs, nonirrigated; Orovada soil—IIC, irrigated, and VIc, nonirrigated*Range site:* Enko and Orovada soils—028B010N; Inclusion 1—028B010N; Inclusion 2—028B009N; Inclusion 3—028B003N**512—Hessing-Relley association***Positions on landscape:* Fan skirts, basin floors**Composition***Major components:*

Hessing gravelly silt loam, 0 to 2 percent slopes—55 percent

Relley silt loam, frequently flooded, 0 to 2 percent slopes—30 percent

*Contrasting inclusions:*

Typic Camborthids, sandy-skeletal, mixed, mesic, 0 to 2 percent slopes—5 percent

Creemon very fine sandy loam, 0 to 2 percent slopes—5 percent

Durorthidic Torriorthents, coarse-loamy, mixed, mesic, occasionally flooded, 0 to 2 percent slopes—5 percent

**Characteristics of the Hessing Soil***Classification:* Typic Camborthids, coarse-loamy, mixed, mesic*Positions on landscape:* Fan skirts at the higher elevations*Parent material:* Loess and silty alluvium that include volcanic ash*Slope:* 0 to 2 percent*Elevation:* 5,200 to 5,500 feet*Average annual precipitation:* About 7 inches*Average annual air temperature:* About 49 degrees F*Frost-free season:* About 120 days*Dominant present vegetation:* Bottlebrush squirreltail, Indian ricegrass, shadscale, bud sagebrush**Typical Profile***Depth:* 0 to 4 inches*Texture:* Gravelly silt loam*Structure:* Platy*Consistence:* Slightly hard, very friable*Reaction:* Moderately alkaline*Salinity:* 2 to 4 millimhos per centimeter*Sodicity (SAR):* 0 to 2*Depth:* 4 to 11 inches*Texture:* Silty clay loam, silt loam*Structure:* Subangular blocky*Consistence:* Hard, friable*Reaction:* Moderately alkaline*Salinity:* 2 to 4 millimhos per centimeter*Sodicity (SAR):* 0 to 5*Depth:* 11 to 18 inches*Texture:* Very fine sandy loam, silt loam*Structure:* Massive*Consistence:* Slightly hard, very friable*Reaction:* Strongly alkaline*Salinity:* 2 to 4 millimhos per centimeter*Sodicity (SAR):* 0 to 5*Depth:* 18 to 30 inches*Texture:* Gravelly loam*Structure:* Massive*Consistence:* Slightly hard, very friable*Reaction:* Strongly alkaline*Salinity:* 8 to 16 millimhos per centimeter*Sodicity (SAR):* 25 to 40*Depth:* 30 to 60 inches*Texture:* Very gravelly sand*Structure:* Single grain*Consistence:* Loose*Reaction:* Moderately alkaline*Salinity:* 16 to 30 millimhos per centimeter*Sodicity (SAR):* 46 to 60**Soil and Water Features***Depth to a seasonal high water table:* More than 60 inches*Frequency of flooding:* None*Permeability:* Moderate*Available water capacity:* 5.8 to 7.3 inches*Water-supplying capacity:* 7 inches

*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.32; T value—3;  
 wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* Low

### **Characteristics of the Relley Soil**

*Classification:* Duric Camborthids, fine-silty, mixed, mesic  
*Positions on landscape:* Broad inset fans, the lower fan skirts  
*Parent material:* Mixed alluvium that includes loess and volcanic ash  
*Slope:* 0 to 2 percent  
*Elevation:* 5,100 to 5,500 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bottlebrush squirreltail, Indian ricegrass, sickle saltbush

### **Typical Profile**

*Depth:* 0 to 8 inches  
*Texture:* Silt loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 8 to 16 inches  
*Texture:* Silt loam  
*Structure:* Prismatic  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 16 to 28 inches  
*Texture:* Silt loam  
*Structure:* Massive  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 28 to 60 inches  
*Texture:* Silt loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* Frequent for very brief periods in December through June  
*Permeability:* Moderate  
*Available water capacity:* 11 to 12 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.55; T value—5;  
 wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—moderate  
*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Typic Camborthids, sandy-skeletal, mixed, mesic  
*Positions on landscape:* Smooth stream terraces adjacent to flood plains  
*Distinctive present vegetation:* Shadscale, bud sagebrush

#### **Inclusion 2**

*Classification:* Duric Camborthids, coarse-silty, mixed, mesic  
*Positions on landscape:* Flood plain remnants  
*Distinctive present vegetation:* Shadscale, bud sagebrush

#### **Inclusion 3**

*Classification:* Durorthidic Torriorthents, coarse-loamy, mixed, mesic  
*Positions on landscape:* Flood plains  
*Distinctive present vegetation:* Basin wildrye, basin big sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Hessing Soil**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor

#### **Relley Soil**

*Wild herbaceous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Poor

### **Suitability and Limitations for Selected Uses**

#### **Hessing Soil**

*Range seeding:* Poor—too arid, excess salt  
*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim  
*Daily cover for landfill:* Poor—seepage, small stones  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Slight  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—seepage, excess salt  
*Sand:* Probable source  
*Gravel:* Probable source

#### **Relley Soil**

*Range seeding:* Poor—too arid  
*Roadfill:* Fair—low strength, shrink-swell  
*Topsoil:* Fair—thin layer  
*Daily cover for landfill:* Good  
*Shallow excavations:* Moderate—flooding  
*Local roads and streets:* Severe—flooding  
*Pond reservoir areas:* Moderate—seepage  
*Embankments, dikes, and levees:* Severe—piping, excess salt  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Restrictive Features for Selected Practices**

##### **Hessing Soil**

*Drainage:* Deep to water  
*Irrigation:* Excess salt  
*Terraces and diversions:* Erodes easily, too sandy

##### **Relley Soil**

*Drainage:* Deep to water  
*Irrigation:* Erodes easily, flooding, excess salt  
*Terraces and diversions:* Erodes easily

#### **Interpretive Groups**

*Land capability classification:* Hessing soil—IIs, irrigated, and VIIs, nonirrigated; Relley soil—IIIw, irrigated, and VIIw, nonirrigated  
*Range site:* Hessing soil—024X002N; Relley soil—024X012N; Inclusions 1 and 2—024X002N; Inclusion 3—024X006N

### **560—Jesse Camp silt loam**

*Positions on landscape:* Stream terraces

#### **Composition**

*Major component:*  
 Jesse Camp silt loam, 0 to 2 percent slopes—85 percent  
*Contrasting inclusions:*  
 Xeric Torriorthents, coarse-loamy, mixed (calcareous), frigid, 0 to 4 percent slopes—8 percent  
 Fenster silt loam, slightly alkali, 0 to 4 percent slopes—4 percent

Jesse Camp silt loam, occasionally flooded, 0 to 2 percent slopes—3 percent

#### **Characteristics of the Jesse Camp Soil**

*Classification:* Xerollic Camborthids, fine-silty, mixed, frigid

*Positions on landscape:* Stream terraces

*Parent material:* Silty alluvium that includes volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 6,000 to 6,500 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Basin wildrye, basin big sagebrush, western wheatgrass

#### **Typical Profile**

*Depth:* 0 to 4 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 4 to 12 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 12 to 60 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Rare

*Permeability:* Moderately slow

*Available water capacity:* 11 to 12 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Xeric Torriorthents, coarse-loamy, mixed (calcareous), frigid

*Positions on landscape:* The higher parts of stream terraces

*Distinctive present vegetation:* Indian ricegrass, Wyoming big sagebrush

#### **Inclusion 2**

*Classification:* Typic Torriorthents, fine-silty, mixed (calcareous), frigid

*Positions on landscape:* Outer margins of stream terraces

*Distinctive present vegetation:* Shadscale, bud sagebrush, Indian ricegrass

#### **Inclusion 3**

*Classification:* Xerollic Camborthids, fine-silty, mixed, frigid

*Positions on landscape:* The lowest parts of stream terraces

*Distinctive present vegetation:* Basin big sagebrush, rabbitbrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

*Range seeding:* Fair—too arid

*Roadfill:* Fair—low strength, shrink-swell

*Topsoil:* Good

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—low strength, frost action, shrink-swell

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Jesse Camp soil—IIC, irrigated, and VIc, nonirrigated

*Range site:* Jesse Camp soil—028B003N; Inclusion 1—028B010N; Inclusion 2—028B017N; Inclusion 3—028B009N

## **621—Loncan-Gando-Glean association**

*Positions on landscape:* Mountains

### **Composition**

#### *Major components:*

Loncan gravelly loam, 15 to 50 percent slopes—40 percent

Gando very gravelly loam, 15 to 30 percent slopes—25 percent

Glean very gravelly loam, 15 to 30 percent slopes—25 percent

#### *Contrasting inclusions:*

Rock outcrop and Rubble land—4 percent

Welch loam, drained, 4 to 15 percent slopes—3 percent

Argic Pachic Cryoborolls, 15 to 30 percent slopes—2 percent

Welch loam, 4 to 15 percent slopes—1 percent

### **Characteristics of the Loncan Soil**

*Classification:* Aridic Haploxerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* The intermediate and lower side slopes of mountains

*Parent material:* Residuum and colluvium derived from chert

*Slope:* 15 to 50 percent

*Elevation:* 6,500 to 8,200 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Bluebunch wheatgrass, needlegrass, mountain big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 5 percent cobbles, 30 percent pebbles

*Depth:* 0 to 9 inches

*Texture:* Gravelly loam

*Structure:* Granular

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 9 to 22 inches

*Texture:* Very gravelly loam

*Structure:* Granular

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 22 inches

*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 21 to 38 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 1.9 to 2.7 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.17; T value—2;  
wind erodibility group—6

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Gando Soil**

*Classification:* Lithic Haploxerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Crests and the upper side slopes of mountains

*Parent material:* Residuum derived from mixed sedimentary rock

*Slope:* 15 to 30 percent

*Elevation:* 7,000 to 8,200 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Bluegrass, Idaho fescue, low sagebrush, black sagebrush

### **Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 20 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Very gravelly loam

*Structure:* Granular

*Consistence:* Soft, very friable

*Reaction:* Mildly alkaline

*Depth:* 4 to 10 inches

*Texture:* Very gravelly loam, extremely gravelly loam

*Structure:* Granular

*Consistence:* Soft, very friable

*Reaction:* Mildly alkaline

*Depth:* 10 inches

*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 0.6 to 1.0 inch

*Water-supplying capacity:* 10 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—1;  
wind erodibility group—7

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Glean Soil**

*Classification:* Pachic Haploxerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* North-facing, concave side slopes of mountains

*Parent material:* Colluvium derived from various kinds of rock

*Slope:* 15 to 30 percent

*Elevation:* 7,500 to 8,200 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Bluebunch wheatgrass, Idaho fescue, mountain big sagebrush, serviceberry

### **Typical Profile**

*Rock fragments on surface:* 20 percent pebbles

*Depth:* 0 to 6 inches

*Texture:* Very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 6 to 39 inches

*Texture:* Very gravelly sandy loam, very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 39 to 51 inches

*Texture:* Very gravelly sandy loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 51 inches

*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 40 to 60 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately rapid

*Available water capacity:* 3.1 to 5.1 inches

*Water-supplying capacity:* 14 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.10; T value—3;  
wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Positions on landscape:* Crests and side slopes of mountains

*Distinctive present vegetation:* None

#### **Inclusion 2**

*Classification:* Cumulic Haplaquolls, fine-loamy, mixed, frigid

*Positions on landscape:* Narrow, entrenched mountain drainageways

*Distinctive present vegetation:* Basin big sagebrush, basin wildrye

#### **Inclusion 3**

*Classification:* Argic Pachic Cryoborolls

*Positions on landscape:* The higher, concave, north-facing back slopes of mountains

*Distinctive present vegetation:* Common chokecherry, snowberry, Idaho fescue

#### **Inclusion 4**

*Classification:* Cumulic Haplaquolls, fine-loamy, mixed, frigid

*Positions on landscape:* Narrow mountain drainageways and canyon bottoms

*Distinctive present vegetation:* Sedge, willow, tufted hairgrass

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Loncan Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Gando Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Glean Soil**

*Wild herbaceous plants (nonirrigated):* Good

*Shrubs (nonirrigated):* Good

### **Suitability and Limitations for Selected Uses**

#### **Loncan Soil**

*Range seeding:* Fair—erodes easily, too arid, droughty

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Gando Soil**

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Glean Soil**

*Range seeding:* Poor—small stones

*Roadfill:* Fair—depth to rock, thin layer, slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Loncan and Glean soils—VIIe, nonirrigated; Gando soil—VIIIs, nonirrigated

*Range site:* Loncan and Glean soils—028B030N; Gando soil—024X016N; Inclusion 1—none; Inclusion 2—025X003N; Inclusion 3—028B026N; Inclusion 4—025X005N

## **632—McConnel-Orovada-Misad association**

*Positions on landscape:* Bolson floors, fan piedmonts

### **Composition**

*Major components:*

McConnel gravelly loam, 2 to 8 percent slopes—50 percent

Orovada fine sandy loam, 2 to 4 percent slopes—20 percent

Misad gravelly very fine sandy loam, 2 to 4 percent slopes—15 percent

*Contrasting inclusions:*

Typic Camborthids, sandy-skeletal, mixed, mesic, 4 to 15 percent slopes—6 percent

Duric Camborthids, loamy-skeletal, mixed, mesic, 4 to 15 percent slopes—6 percent

Duric Camborthids, coarse-silty, mixed, mesic, 0 to 2 percent slopes—3 percent



### **Characteristics of the McConnel Soil**

*Classification:* Xerollic Camborthids, sandy-skeletal, mixed, mesic  
*Positions on landscape:* Beach terrace remnants  
*Parent material:* Alluvium that includes some loess and ash over lacustrine sediment  
*Slope:* 2 to 8 percent  
*Elevation:* 6,100 to 6,400 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 50 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bottlebrush squirreltail, bluegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 20 percent pebbles

*Depth:* 0 to 6 inches  
*Texture:* Gravelly loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 12 inches  
*Texture:* Fine sandy loam, loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 12 to 60 inches  
*Texture:* Stratified very gravelly sandy loam to extremely gravelly coarse sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately rapid over very rapid  
*Available water capacity:* 2.9 to 4.2 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.32; T value—2; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—moderate  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—moderate  
*Potential for frost action:* Low

### **Characteristics of the Orovada Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Inset fans, areas between beach terrace remnants  
*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium  
*Slope:* 2 to 4 percent  
*Elevation:* 6,100 to 6,400 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

#### **Typical Profile**

*Depth:* 0 to 8 inches  
*Texture:* Fine sandy loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 8 to 20 inches  
*Texture:* Fine sandy loam, loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 20 to 65 inches  
*Texture:* Stratified fine sandy loam to silt loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 9.0 to 10.5 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

### **Characteristics of the Misad Soil**

*Classification:* Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic

*Positions on landscape:* The lower areas on offshore bars

*Parent material:* Mixed alluvium that includes loess that is high in content of ash

*Slope:* 2 to 4 percent

*Elevation:* 6,100 to 6,300 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

### **Typical Profile**

*Depth:* 0 to 7 inches

*Texture:* Gravelly very fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 7 to 31 inches

*Texture:* Stratified fine sandy loam to very gravelly sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

*Depth:* 31 to 60 inches

*Texture:* Stratified very gravelly loamy sand to extremely gravelly coarse sand

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately rapid

*Available water capacity:* 2.9 to 4.1 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Typic Camborthids, sandy-skeletal, mixed, mesic

*Positions on landscape:* Convex barrier bars and offshore bars adjacent to lake plains

*Distinctive present vegetation:* Wyoming big sagebrush, black greasewood, basin wildrye

#### **Inclusion 2**

*Classification:* Duric Camborthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* The higher remnant barrier and offshore bars

*Distinctive present vegetation:* Shadscale, bud sagebrush, black greasewood

#### **Inclusion 3**

*Classification:* Duric Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Remnant lagoons and fan skirts

*Distinctive present vegetation:* Annuals

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **McConnel Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Orovada Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Misad Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

### **Suitability and Limitations for Selected Uses**

#### **McConnel Soil**

*Range seeding:* Fair—too arid, droughty

*Roadfill:* Good

*Topsoil:* Poor—too sandy, small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage, excess salt

*Sand:* Probable source

*Gravel:* Probable source

#### **Orovada Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Fair—small stones, thin layer

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Misad Soil**

*Range seeding:* Poor—too arid, excess salt

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

#### **Interpretive Groups**

*Land capability classification:* McConnel and Misad soils—IVe, irrigated, and VIIs, nonirrigated; Orovada soil—IIe, irrigated, and VIc, nonirrigated

*Range site:* McConnel soil—024X005N; Orovada soil—028B010N; Misad soil—024X002N; Inclusion 1—024X022N; Inclusion 2—024X003N; Inclusion 3—024X004N

### **633—McConnel-Rasille-Wholan association**

*Positions on landscape:* The lower fan piedmonts, beach terraces

#### **Composition**

*Major components:*

McConnel gravelly loam, 2 to 8 percent slopes—35 percent

Rasille silt loam, 0 to 2 percent slopes—25 percent

Wholan silt loam, 0 to 2 percent slopes—25 percent

*Contrasting inclusions:*

Orovada fine sandy loam, 2 to 4 percent slopes—8 percent

Defler gravelly fine sandy loam, 0 to 4 percent slopes—5 percent

Xerollic Haplargids, fine, montmorillonitic, mesic, 0 to 2 percent slopes—2 percent

#### **Characteristics of the McConnel Soil**

*Classification:* Xerollic Camborthids, sandy-skeletal, mixed, mesic

*Positions on landscape:* Beach terrace remnants that follow the contour of the shoreline

*Parent material:* Alluvium that includes some loess and ash over lacustrine sediment

*Slope:* 2 to 8 percent

*Elevation:* 6,000 to 6,300 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bottlebrush squirreltail, bluegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 20 percent pebbles

*Depth:* 0 to 6 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 12 inches

*Texture:* Fine sandy loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 12 to 60 inches

*Texture:* Stratified very gravelly sandy loam to extremely gravelly coarse sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately rapid over very rapid

*Available water capacity:* 2.9 to 4.2 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.32; T value—2; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—moderate

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—moderate

*Potential for frost action:* Low

**Characteristics of the Rasille Soil**

*Classification:* Durixerollic Camborthids, coarse-silty, mixed, mesic  
*Positions on landscape:* Fan skirts, areas between beach terrace remnants  
*Parent material:* Silty alluvium derived from loess and various kinds of rock  
*Slope:* 0 to 2 percent  
*Elevation:* 6,000 to 6,300 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bottlebrush squirreltail, Indian ricegrass, needlegrass, Wyoming big sagebrush

**Typical Profile**

*Depth:* 0 to 6 inches  
*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 6 to 15 inches  
*Texture:* Silt loam  
*Structure:* Prismatic  
*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 15 to 60 inches  
*Texture:* Silt loam, very fine sandy loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* Rare  
*Permeability:* Moderate  
*Available water capacity:* 10 to 12 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

**Characteristics of the Wholan Soil**

*Classification:* Typic Camborthids, coarse-silty, mixed, mesic  
*Positions on landscape:* Inset fans  
*Parent material:* Loess mantle over silty alluvium  
*Slope:* 0 to 2 percent  
*Elevation:* 6,000 to 6,300 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, bluegrass, winterfat

**Typical Profile**

*Depth:* 0 to 6 inches  
*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 6 to 60 inches  
*Texture:* Silt loam, very fine sandy loam  
*Structure:* Massive  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* Rare  
*Permeability:* Moderate  
*Available water capacity:* 10 to 11 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

**Contrasting Inclusions****Inclusion 1**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* The highest parts of inset fans and fan drainageways  
*Distinctive present vegetation:* Wyoming big sagebrush, bottlebrush squirreltail

**Inclusion 2**

*Classification:* Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic

*Positions on landscape:* Convex inset fans dissecting remnant shorelines

*Distinctive present vegetation:* Winterfat, bud sagebrush, Indian ricegrass

**Inclusion 3**

*Classification:* Xerollic Haplargids, fine, montmorillonitic, mesic

*Positions on landscape:* Remnant lagoons

*Distinctive present vegetation:* Basin wildrye, basin big sagebrush

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****McConnel Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Rasille Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Wholan Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

**Suitability and Limitations for Selected Uses****McConnel Soil**

*Range seeding:* Fair—too arid, droughty

*Roadfill:* Good

*Topsoil:* Poor—too sandy, small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage, excess salt

*Sand:* Probable source

*Gravel:* Probable source

**Rasille Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Fair—excess salt

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—flooding, frost action

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Wholan Soil**

*Range seeding:* Poor—too arid, excess salt

*Roadfill:* Good

*Topsoil:* Poor—excess salt

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—flooding

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fine

*Gravel:* Improbable source—excess fines

**Restrictive Features for Selected Practices****Rasille Soil**

*Drainage:* Deep to water

*Irrigation:* Erodes easily, excess salt

*Terraces and diversions:* Erodes easily

**Wholan Soil**

*Drainage:* Deep to water

*Irrigation:* Erodes easily

*Terraces and diversions:* Erodes easily

**Interpretive Groups**

*Land capability classification:* McConnel soil—IVe, irrigated, and VIIc, nonirrigated; Rasille soil—IIIc, irrigated, and VIc, nonirrigated; Wholan soil—IIc, irrigated, and VIIc, nonirrigated

*Range site:* McConnel soil—024X005N; Rasille soil—028B010N; Wholan soil—024X004N; Inclusion 1—028B010N; Inclusion 2—028B013N; Inclusion 3—024X006N

**635—McConnel-Rasille association**

*Positions on landscape:* The lower fan piedmonts

**Composition**

*Major components:*

McConnel gravelly loam, 2 to 4 percent slopes—55 percent

Rasille silt loam, gravelly substratum, 0 to 2 percent slopes—30 percent

*Contrasting inclusions:*

Orovada fine sandy loam, 0 to 2 percent slopes—8 percent

Allor fine sandy loam, 2 to 4 percent slopes—4 percent  
Durixerollic Camborthids, coarse-silty, mixed, mesic, 0 to 2 percent slopes—3 percent

**Characteristics of the McConnel Soil**

*Classification:* Xerollic Camborthids, sandy-skeletal, mixed, mesic

*Positions on landscape:* Beach terrace remnants that follow the contour of the shoreline

*Parent material:* Alluvium that includes some loess and ash over lacustrine sediment

*Slope:* 2 to 4 percent

*Elevation:* 5,800 to 6,000 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bottlebrush squirreltail, bluegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 20 percent pebbles

*Depth:* 0 to 6 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 12 inches

*Texture:* Fine sandy loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 12 to 60 inches

*Texture:* Stratified very gravelly sandy loam to extremely gravelly coarse sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately rapid over very rapid

*Available water capacity:* 2.9 to 4.2 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.32; T value—2; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—moderate

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—moderate

*Potential for frost action:* Low

#### **Characteristics of the Rasille Soil**

*Classification:* Durixerollic Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Areas between beach terrace remnants and fan skirts

*Parent material:* Silty alluvium derived from loess and various kinds of rock

*Slope:* 0 to 2 percent

*Elevation:* 5,800 to 6,000 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bottlebrush squirreltail, Indian ricegrass, needlegrass, Wyoming big sagebrush

#### **Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 15 inches

*Texture:* Silt loam

*Structure:* Prismatic

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 15 to 41 inches

*Texture:* Silt loam, very fine sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

*Depth:* 41 to 60 inches

*Texture:* Stratified fine sandy loam to very gravelly coarse sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Moderately alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Rare

*Permeability:* Moderate

*Available water capacity:* 7.6 to 9.3 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5;  
wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Fan drainageways  
*Distinctive present vegetation:* Wyoming big sagebrush, bottlebrush squirreltail

#### **Inclusion 2**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic  
*Positions on landscape:* Nonburied fan piedmont remnants  
*Distinctive present vegetation:* Wyoming big sagebrush, bottlebrush squirreltail

#### **Inclusion 3**

*Classification:* Durixerollic Camborthids, coarse-silty, mixed, mesic  
*Positions on landscape:* Inset fans  
*Distinctive present vegetation:* Sickie saltbush, halogeton, bluegrass

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **McConnel Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### **Rasille Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **McConnel Soil**

*Range seeding:* Fair—too arid, droughty  
*Roadfill:* Good  
*Topsoil:* Poor—too sandy, small stones, area reclaim  
*Daily cover for landfill:* Poor—seepage, too sandy, small stones  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Slight  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—seepage, excess salt  
*Sand:* Probable source  
*Gravel:* Probable source

#### **Rasille Soil**

*Range seeding:* Fair—too arid  
*Roadfill:* Good  
*Topsoil:* Fair—area reclaim, excess salt  
*Daily cover for landfill:* Fair—thin layer  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Moderate—flooding, frost action  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—piping  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

### **Restrictive Features for Selected Practices**

#### **Rasille Soil**

*Drainage:* Deep to water  
*Irrigation:* Erodes easily, excess salt  
*Terraces and diversions:* Erodes easily

### **Interpretive Groups**

*Land capability classification:* McConnel soil—IVe, irrigated, and VIIs, nonirrigated; Rasille soil—IIIc, irrigated, and VIc, nonirrigated  
*Range site:* McConnel soil—024X005N; Rasille soil—028B010N; Inclusions 1 and 2—028B010N; Inclusion 3—024X012N

### **636—McConnel-Defler-Rasille association**

*Positions on landscape:* The lower fan piedmonts and fan skirts

### **Composition**

#### **Major components:**

McConnel gravelly loam, 2 to 4 percent slopes—40 percent  
Defler gravelly fine sandy loam, 2 to 4 percent slopes—30 percent  
Rasille silt loam, 0 to 2 percent slopes—15 percent  
*Contrasting inclusions:*  
Typic Camborthids, coarse-loamy, mixed, mesic, 0 to 2 percent slopes—9 percent  
Xerollic Camborthids, loamy-skeletal, mixed, mesic, 0 to 4 percent slopes—4 percent  
Broyles very fine sandy loam, 0 to 2 percent slopes—2 percent

### **Characteristics of the McConnel Soil**

*Classification:* Xerollic Camborthids, sandy-skeletal, mixed, mesic  
*Positions on landscape:* Beach terrace remnants that follow the contour of the shoreline  
*Parent material:* Alluvium that includes some loess and ash over lacustrine sediment  
*Slope:* 2 to 4 percent

*Elevation:* 6,000 to 6,300 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 50 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bottlebrush squirreltail, bluegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 20 percent pebbles  
*Depth:* 0 to 6 inches  
*Texture:* Gravelly loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 6 to 12 inches  
*Texture:* Fine sandy loam, loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 12 to 60 inches  
*Texture:* Stratified very gravelly sandy loam to extremely gravelly coarse sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately rapid over very rapid  
*Available water capacity:* 2.9 to 4.2 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.32; T value—2; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—moderate  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—moderate  
*Potential for frost action:* Low

#### **Characteristics of the Defler Soil**

*Classification:* Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic  
*Positions on landscape:* Convex inset fans  
*Parent material:* Mixed alluvium that includes loess and volcanic ash

*Slope:* 2 to 4 percent  
*Elevation:* 6,200 to 6,300 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 47 degrees F  
*Frost-free season:* About 100 days  
*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, winterfat

#### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles  
*Depth:* 0 to 5 inches  
*Texture:* Gravelly fine sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 5 to 35 inches  
*Texture:* Very gravelly fine sandy loam, very gravelly sandy loam  
*Structure:* Massive  
*Consistence:* Soft, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 35 to 70 inches  
*Texture:* Stratified very gravelly sandy loam to extremely gravelly coarse sand  
*Structure:* Massive  
*Consistence:* Hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* Rare  
*Permeability:* Moderately rapid  
*Available water capacity:* 2.9 to 4.4 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—4  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Characteristics of the Rasille Soil**

*Classification:* Durixerollic Camborthids, coarse-silty, mixed, mesic  
*Positions on landscape:* Smooth fan skirts



*Parent material:* Silty alluvium derived from loess and various kinds of rock

*Slope:* 0 to 2 percent

*Elevation:* 6,000 to 6,300 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bottlebrush squirreltail, Indian ricegrass, needlegrass, Wyoming big sagebrush

### **Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 15 inches

*Texture:* Silt loam

*Structure:* Prismatic

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 15 to 60 inches

*Texture:* Silt loam, very fine sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Rare

*Permeability:* Moderate

*Available water capacity:* 11 to 12 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Typic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* The lower inset fans

*Distinctive present vegetation:* Bud sagebrush, winterfat

#### **Inclusion 2**

*Classification:* Xerollic Camborthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Fan drainageways

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Inclusion 3**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* The lower fan skirt margins

*Distinctive present vegetation:* Shadscale, bud sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **McConnel Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Defler Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

#### **Rasille Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **McConnel Soil**

*Range seeding:* Fair—too arid, droughty

*Roadfill:* Good

*Topsoil:* Poor—too sandy, small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage, excess salt

*Sand:* Probable source

*Gravel:* Probable source

#### **Defler Soil**

*Range seeding:* Poor—droughty, too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—flooding

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Improbable source—small stones

*Gravel:* Probable source

**Rasille Soil***Range seeding:* Fair—too arid*Roadfill:* Good*Topsoil:* Fair—excess salt*Daily cover for landfill:* Good*Shallow excavations:* Slight*Local roads and streets:* Moderate—flooding, frost action*Pond reservoir areas:* Moderate—seepage*Embankments, dikes, and levees:* Severe—piping*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines**Restrictive Features for Selected Practices****Rasille Soil***Drainage:* Deep to water*Irrigation:* Erodes easily*Terraces and diversions:* Erodes easily**Interpretive Groups***Land capability classification:* McConnel soil—Ive, irrigated, and VIIs, nonirrigated; Defler soil—Ive, irrigated, and VIIC, nonirrigated; Rasille soil—IIIC, irrigated, and VIC, nonirrigated*Range site:* McConnel soil—024X005N; Defler soil—024X004N; Rasille soil—028B010N; Inclusion 1—024X004N; Inclusion 2—028B010N; Inclusion 3—024X002N**637—McConnel-Orovada association***Positions on landscape:* Fan skirts, inset fans**Composition***Major components:*

McConnel fine sandy loam, 0 to 2 percent slopes—35 percent

Orovada very fine sandy loam, rarely flooded, 0 to 2 percent slopes—25 percent

McConnel gravelly fine sandy loam, 0 to 2 percent slopes—25 percent

*Contrasting inclusions:*

Duric Camborthids, loamy-skeletal, mixed, mesic, 0 to 2 percent slopes—6 percent

Orovada fine sandy loam, 0 to 4 percent slopes—6 percent

Wholan silt loam, gravelly substratum, 0 to 2 percent slopes—3 percent

**Characteristics of the McConnel Soil***Classification:* Xerollic Camborthids, sandy-skeletal, mixed, mesic*Positions on landscape:* Broad inset fan remnants*Parent material:* Alluvium that includes some loess and ash over lacustrine sediment*Slope:* 0 to 2 percent*Elevation:* 6,200 to 6,500 feet*Average annual precipitation:* About 9 inches*Average annual air temperature:* About 50 degrees F*Frost-free season:* About 100 days*Dominant present vegetation:* Bottlebrush squirreltail, bluegrass, Wyoming big sagebrush**Typical Profile***Rock fragments on surface:* 20 percent pebbles*Depth:* 0 to 6 inches*Texture:* Fine sandy loam*Structure:* Platy*Consistence:* Soft, very friable*Reaction:* Mildly alkaline*Salinity:* 0 to 2 millimhos per centimeter*Sodicity (SAR):* 0 to 2*Depth:* 6 to 12 inches*Texture:* Fine sandy loam, loam*Structure:* Subangular blocky*Consistence:* Slightly hard, friable*Reaction:* Mildly alkaline*Salinity:* 0 to 2 millimhos per centimeter*Sodicity (SAR):* 0 to 2*Depth:* 12 to 60 inches*Texture:* Stratified very gravelly sandy loam to extremely gravelly coarse sand*Structure:* Single grain*Consistence:* Loose*Reaction:* Moderately alkaline*Salinity:* 2 to 4 millimhos per centimeter*Sodicity (SAR):* 0 to 5**Soil and Water Features***Depth to a seasonal high water table:* More than 60 inches*Frequency of flooding:* None*Permeability:* Moderately rapid over very rapid*Available water capacity:* 2.9 to 4.2 inches*Water-supplying capacity:* 9 inches*Runoff:* Slow*Hydrologic group:* B*Erosion factors (upper layer):* K value—0.37; T value—2; wind erodibility group—3*Hazard of erosion:* By water—slight; by wind—severe*Shrink-swell potential:* Low*Corrosivity:* To steel—high; to concrete—moderate*Potential for frost action:* Low**Characteristics of the Orovada Soil***Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic*Positions on landscape:* Fan skirt remnants*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 0 to 2 percent  
*Elevation:* 6,200 to 6,500 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 100 days  
*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

### **Typical Profile**

*Depth:* 0 to 8 inches  
*Texture:* Very fine sandy loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 8 to 20 inches  
*Texture:* Fine sandy loam, loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 20 to 65 inches  
*Texture:* Stratified fine sandy loam to silt loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* Rare  
*Permeability:* Moderate  
*Available water capacity:* 9.5 to 11.0 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.49; T value—5; wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

### **Characteristics of the McConnel Soil, Gravelly**

*Classification:* Xerollic Camborthids, sandy-skeletal, mixed, mesic  
*Positions on landscape:* Outer margins of inset fan remnants near fan skirts  
*Parent material:* Alluvium that includes some loess and ash over lacustrine sediment

*Slope:* 0 to 2 percent  
*Elevation:* 6,200 to 6,500 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 100 days  
*Dominant present vegetation:* Bottlebrush squirreltail, bluegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 20 percent pebbles

*Depth:* 0 to 6 inches  
*Texture:* Gravelly fine sandy loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 12 inches  
*Texture:* Fine sandy loam, loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 12 to 60 inches  
*Texture:* Stratified very gravelly sandy loam to extremely gravelly coarse sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately rapid over very rapid  
*Available water capacity:* 2.7 to 4.0 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.32; T value—2; wind erodibility group—4  
*Hazard of erosion:* By water—slight; by wind—moderate  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—moderate  
*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Duric Camborthids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Fan skirt remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush

### **Inclusion 2**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Adjacent to channeled areas on the lower inset fans

*Distinctive present vegetation:* Wyoming big sagebrush

### **Inclusion 3**

*Classification:* Typic Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Convex, occasionally flooded inset fans

*Distinctive present vegetation:* Bottlebrush squirreltail, winterfat

## **Major Current Uses**

Livestock grazing, wildlife habitat

## **Suitability for Wildlife Habitat Elements**

### **McConnel Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Orovada Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **McConnel Soil, Gravelly**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

## **Suitability and Limitations for Selected Uses**

### **McConnel Soil**

*Range seeding:* Fair—too arid, droughty

*Roadfill:* Good

*Topsoil:* Poor—too sandy, small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage, excess salt

*Sand:* Probable source

*Gravel:* Probable source

### **Orovada Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Fair—small stones, thin layer

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—frost action, flooding

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **McConnel Soil, Gravelly**

*Range seeding:* Fair—too arid, droughty

*Roadfill:* Good

*Topsoil:* Poor—too sandy, small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage, excess salt

*Sand:* Probable source

*Gravel:* Probable source

## **Interpretive Groups**

*Land capability classification:* McConnel soil—IVs, irrigated, and VIs, nonirrigated; Orovada soil—IIc, irrigated, and VIc, nonirrigated; McConnel soil, gravelly—IVs, irrigated, and VIIs, nonirrigated

*Range site:* McConnel and Orovada soils—028B010N; Inclusion 1—028B017N; Inclusion 2—028B010N; Inclusion 3—028B013N

## **638—McConnel-Wholan association**

*Positions on landscape:* Fan skirts, inset fans

## **Composition**

*Major components:*

McConnel fine sandy loam, 0 to 2 percent slopes—75 percent

Wholan silt loam, occasionally flooded, 0 to 2 percent slopes—20 percent

*Contrasting inclusion:*

Orovada very fine sandy loam, 0 to 4 percent slopes—5 percent

## **Characteristics of the McConnel Soil**

*Classification:* Xerollic Camborthids, sandy-skeletal, mixed, mesic

*Positions on landscape:* Fan skirts

*Parent material:* Alluvium that includes some loess and ash over lacustrine sediment

*Slope:* 0 to 2 percent

*Elevation:* 6,200 to 6,400 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 50 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Bottlebrush squirreltail, bluegrass, Wyoming big sagebrush

## **Typical Profile**

*Rock fragments on surface:* 20 percent pebbles

*Depth:* 0 to 6 inches  
*Texture:* Fine sandy loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 12 inches  
*Texture:* Fine sandy loam, loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 12 to 60 inches  
*Texture:* Stratified very gravelly sandy loam to extremely gravelly coarse sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately rapid over very rapid  
*Available water capacity:* 2.9 to 4.2 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.37; T value—2; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—moderate  
*Potential for frost action:* Low

#### **Characteristics of the Wholan Soil**

*Classification:* Typic Camborthids, coarse-silty, mixed, mesic  
*Positions on landscape:* Narrow inset fans  
*Parent material:* Loess mantle over silty alluvium  
*Slope:* 0 to 2 percent  
*Elevation:* 6,200 to 6,400 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 100 days  
*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, bluegrass, winterfat

#### **Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 60 inches  
*Texture:* Silt loam, very fine sandy loam  
*Structure:* Massive  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* Occasional for very brief periods in December through April  
*Permeability:* Moderate  
*Available water capacity:* 10 to 12 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Contrasting Inclusion**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Broad areas on inset fans  
*Distinctive present vegetation:* Wyoming big sagebrush, bottlebrush squirreltail

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **McConnel Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

##### **Wholan Soil**

*Wild herbaceous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Poor

#### **Suitability and Limitations for Selected Uses**

##### **McConnel Soil**

*Range seeding:* Fair—too arid, droughty  
*Roadfill:* Good  
*Topsoil:* Poor—too sandy, small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage, excess salt

*Sand:* Probable source

*Gravel:* Probable source

#### **Wholan Soil**

*Range seeding:* Poor—too arid, excess salt

*Roadfill:* Good

*Topsoil:* Poor—excess salt

*Daily cover for landfill:* Good

*Shallow excavations:* Moderate—flooding

*Local roads and streets:* Severe—flooding

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Restrictive Features for Selected Practices**

#### **Wholan Soil**

*Drainage:* Deep to water

*Irrigation:* Erodes easily, flooding

*Terraces and diversions:* Erodes easily

#### **Interpretive Groups**

*Land capability classification:* McConnel soil—IVs, irrigated, and VIIs, nonirrigated; Wholan soil—IIw, irrigated, and VIIw, nonirrigated

*Range site:* McConnel soil—028B010N; Wholan soil—028B013N; Inclusion—028B010N

### **670—Fillran-Pineval-Kingingham association**

*Positions on landscape:* Fan piedmonts

#### **Composition**

*Major components:*

Fillran silt loam, 2 to 4 percent slopes—40 percent

Pineval gravelly fine sandy loam, 4 to 8 percent slopes—30 percent

Kingingham gravelly very fine sandy loam, 2 to 4 percent slopes—15 percent

*Contrasting inclusions:*

Allor gravelly loam, 4 to 15 percent slopes—8 percent

Orovada fine sandy loam, 2 to 4 percent slopes—7 percent

#### **Characteristics of the Fillran Soil**

*Classification:* Haploxerollic Nadurargids, fine, montmorillonitic, mesic

*Positions on landscape:* The upper summits of fan piedmont remnants

*Parent material:* Loess over mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 5,700 to 6,000 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Bottlebrush squirreltail, bluegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 10 percent pebbles

*Depth:* 0 to 7 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 7 to 12 inches

*Texture:* Gravelly silt loam

*Structure:* Platy

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 5 to 10

*Depth:* 12 to 33 inches

*Texture:* Clay, gravelly clay

*Structure:* Prismatic

*Consistence:* Very hard, very firm

*Reaction:* Strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

*Depth:* 33 to 60 inches

*Material:* Cemented hardpan

#### **Soil and Water Features**

*Depth to the hardpan:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Very slow

*Available water capacity:* 4.5 to 5.5 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.49; T value—2; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—moderate

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

### **Characteristics of the Pineval Soil**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Fan aprons

*Parent material:* Mixed alluvium

*Slope:* 4 to 8 percent

*Elevation:* 5,700 to 6,000 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 40 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 5 to 11 inches

*Texture:* Very gravelly loam, very gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 11 to 60 inches

*Texture:* Extremely gravelly sandy loam, extremely gravelly loamy sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 3.0 to 4.2 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Kingingham Soil**

*Classification:* Typic Nadurargids, fine, montmorillonitic, mesic

*Positions on landscape:* The lower summits of fan piedmont remnants

*Parent material:* Thin loess mantle over alluvium derived from various kinds of rock

*Slope:* 2 to 4 percent

*Elevation:* 5,600 to 5,900 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, shadscale, bud sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 20 percent pebbles

*Depth:* 0 to 7 inches

*Texture:* Gravelly very fine sandy loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 7 to 22 inches

*Texture:* Gravelly clay, gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 25 to 40

*Depth:* 22 to 60 inches

*Material:* Indurated hardpan

*Structure:* Massive

*Consistence:* Extremely hard, extremely firm

#### **Soil and Water Features**

*Depth to the hardpan:* 20 to 30 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 3.5 to 4.2 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.32; T value—2; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—moderate

*Potential for frost action:* Low

### ***Contrasting Inclusions***

#### **Inclusion 1**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* Side slopes of fan piedmont remnants

*Distinctive present vegetation:* Indian ricegrass, bluegrass, Wyoming big sagebrush

#### **Inclusion 2**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Wyoming big sagebrush, bluegrass

### ***Major Current Uses***

Livestock grazing, wildlife habitat

### ***Suitability for Wildlife Habitat Elements***

#### **Filiran Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Pineval Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Kingingham Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

### ***Suitability and Limitations for Selected Uses***

#### **Filiran Soil**

*Range seeding:* Poor—excess sodium

*Roadfill:* Poor—cemented pan, shrink-swell, low strength

*Topsoil:* Poor—too clayey, small stones, excess sodium

*Daily cover for landfill:* Poor—cemented pan, hard to pack

*Shallow excavations:* Severe—cemented pan

*Local roads and streets:* Severe—shrink-swell, low strength

*Pond reservoir areas:* Moderate—cemented pan, slope

*Embankments, dikes, and levees:* Severe—excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Pineval Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

#### **Kingingham Soil**

*Range seeding:* Poor—excess sodium, rooting depth

*Roadfill:* Poor—cemented pan, shrink-swell, low strength

*Topsoil:* Poor—too clayey, small stones, excess salt

*Daily cover for landfill:* Poor—cemented pan, hard to pack

*Shallow excavations:* Severe—cemented pan

*Local roads and streets:* Severe—shrink-swell, low strength

*Pond reservoir areas:* Moderate—cemented pan, slope

*Embankments, dikes, and levees:* Severe—excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### ***Interpretive Groups***

*Land capability classification:* Filiran and Kingingham soils—VII<sub>s</sub>, nonirrigated; Pineval soil—IV<sub>e</sub>, irrigated, and VII<sub>s</sub>, nonirrigated

*Range site:* Filiran and Pineval soils—028B010N;

Kingingham soil—024X002N; Inclusions 1 and 2—028B010N

## **674—Filiran-Buffaran association**

*Positions on landscape:* Fan piedmonts

### ***Composition***

*Major components:*

Filiran very gravelly loam, 2 to 4 percent slopes—50 percent

Buffaran extremely gravelly loam, 8 to 30 percent slopes—35 percent

*Contrasting inclusions:*

Pineval gravelly loam, 2 to 8 percent slopes—8 percent

Allor gravelly loam, 4 to 8 percent slopes—4 percent

Haplic Nadurargids, loamy-skeletal, mixed, mesic, 2 to 4 percent slopes—3 percent

### ***Characteristics of the Filiran Soil***

*Classification:* Haploxerollic Nadurargids, fine, montmorillonitic, mesic

*Positions on landscape:* Summits of fan piedmont remnants

*Parent material:* Loess over mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 5,800 to 6,200 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F



*Frost-free season:* About 120 days  
*Dominant present vegetation:* Bottlebrush squirreltail,  
 bluegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 10 percent pebbles

*Depth:* 0 to 7 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 7 to 12 inches

*Texture:* Gravelly silt loam

*Structure:* Platy

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 12 to 33 inches

*Texture:* Clay, gravelly clay

*Structure:* Prismatic

*Consistence:* Very hard, very firm

*Reaction:* Strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

*Depth:* 33 to 60 inches

*Material:* Cemented hardpan

#### **Soil and Water Features**

*Depth to the hardpan:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60  
 inches

*Frequency of flooding:* None

*Permeability:* Very slow

*Available water capacity:* 4.5 to 5.5 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.20; T value—2;  
 wind erodibility group—7

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

#### **Characteristics of the Buffaran Soil**

*Classification:* Xerollic Durargids, clayey,  
 montmorillonitic, mesic, shallow

*Positions on landscape:* Shoulder slopes and side  
 slopes of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 8 to 30 percent

*Elevation:* 5,800 to 6,200 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Thurber needlegrass,  
 bottlebrush squirreltail, Indian ricegrass, big  
 sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 65 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Extremely gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 5 to 16 inches

*Texture:* Clay, gravelly clay, gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 16 to 27 inches

*Material:* Indurated hardpan

*Structure:* Massive

*Consistence:* Extremely hard, extremely firm

*Depth:* 27 to 60 inches

*Material:* Cemented hardpan

*Structure:* Platy

*Consistence:* Very hard, very firm

#### **Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60  
 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.9 to 2.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.05; T value—1;  
 wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Durixerollic Haplargids, loamy-skeletal,  
 mixed, mesic

*Positions on landscape:* Foot slopes of fan piedmonts  
*Distinctive present vegetation:* Bottlebrush squirreltail, bluegrass, Wyoming big sagebrush

#### **Inclusion 2**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* The lower side slopes of fan piedmont remnants

*Distinctive present vegetation:* Bottlebrush squirreltail, Wyoming big sagebrush

#### **Inclusion 3**

*Classification:* Haplic Nadurargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* The lower summits and shoulder slopes of fan piedmont remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Filiran Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Buffaran Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Filiran Soil**

*Range seeding:* Poor—small stones, excess sodium

*Roadfill:* Poor—cemented pan, shrink-swell, low strength

*Topsoil:* Poor—too clayey, small stones, excess sodium

*Daily cover for landfill:* Poor—cemented pan, hard to pack

*Shallow excavations:* Severe—cemented pan

*Local roads and streets:* Severe—shrink-swell, low strength

*Pond reservoir areas:* Moderate—cemented pan, slope

*Embankments, dikes, and levees:* Severe—excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Buffaran Soil**

*Range seeding:* Poor—droughty, rooting depth, small stones

*Roadfill:* Poor—cemented pan, shrink-swell, low strength

*Topsoil:* Poor—cemented pan, too clayey, small stones

*Daily cover for landfill:* Poor—cemented pan, hard to pack, slope

*Shallow excavations:* Severe—cemented pan, slope

*Local roads and streets:* Severe—cemented pan, shrink-swell, low strength

*Pond reservoir areas:* Severe—cemented pan, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Filiran and Buffaran soils—VIIIs, nonirrigated

*Range site:* Filiran and Buffaran soils—028B010N; Inclusions 1 and 2—028B010N; Inclusion 3—024X002N

## **675—Filiran-Buffaran-Orovada association**

*Positions on landscape:* Fan piedmonts

### **Composition**

*Major components:*

Filiran very gravelly loam, 2 to 4 percent slopes—40 percent

Buffaran gravelly loam, 4 to 8 percent slopes—25 percent

Orovada fine sandy loam, 2 to 4 percent slopes—20 percent

*Contrasting inclusions:*

Chiara gravelly loam, 4 to 15 percent slopes—8 percent

Pineval gravelly loam, 4 to 8 percent slopes—7 percent

### **Characteristics of the Filiran Soil**

*Classification:* Haploxerollic Nadurargids, fine, montmorillonitic, mesic

*Positions on landscape:* Summits of fan piedmont remnants

*Parent material:* Loess over mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 5,800 to 6,200 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Bottlebrush squirreltail, bluegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 40 percent pebbles

*Depth:* 0 to 7 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 7 to 12 inches  
*Texture:* Gravelly silt loam  
*Structure:* Platy  
*Consistence:* Hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 12 to 33 inches  
*Texture:* Clay, gravelly clay  
*Structure:* Prismatic  
*Consistence:* Very hard, very firm  
*Reaction:* Strongly alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 13 to 25

*Depth:* 33 to 60 inches  
*Material:* Cemented hardpan

#### **Soil and Water Features**

*Depth to the hardpan:* 20 to 40 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Very slow  
*Available water capacity:* 4.5 to 5.5 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Slow  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.20; T value—2; wind erodibility group—7  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* High  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* Low

#### **Characteristics of the Buffaran Soil**

*Classification:* Xerollic Durargids, clayey, montmorillonitic, mesic, shallow  
*Positions on landscape:* Shoulder slopes of fan piedmont remnants  
*Parent material:* Mixed alluvium  
*Slope:* 4 to 8 percent  
*Elevation:* 5,800 to 6,200 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Thurber needlegrass, bottlebrush squirreltail, Indian ricegrass, big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 15 percent pebbles  
*Depth:* 0 to 5 inches  
*Texture:* Gravelly loam  
*Structure:* Platy

*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 5 to 16 inches  
*Texture:* Clay, gravelly clay, gravelly clay loam  
*Structure:* Prismatic  
*Consistence:* Hard, firm  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 16 to 27 inches  
*Material:* Indurated hardpan  
*Structure:* Massive  
*Consistence:* Extremely hard, extremely firm

*Depth:* 27 to 60 inches  
*Material:* Cemented hardpan  
*Structure:* Platy  
*Consistence:* Very hard, very firm

#### **Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 1.9 to 2.4 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.32; T value—1; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* High  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Characteristics of the Orovada Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Inset fans  
*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium  
*Slope:* 2 to 4 percent  
*Elevation:* 5,800 to 6,200 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

#### **Typical Profile**

*Depth:* 0 to 8 inches

*Texture:* Fine sandy loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 8 to 20 inches  
*Texture:* Fine sandy loam, loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 20 to 65 inches  
*Texture:* Stratified fine sandy loam to silt loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 9.0 to 11.0 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Xerollic Durorthids, loamy, mixed, mesic, shallow  
*Positions on landscape:* South-facing side slopes of fan piedmont remnants  
*Distinctive present vegetation:* Wyoming big sagebrush

##### **Inclusion 2**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* The higher parts of inset fans  
*Distinctive present vegetation:* Bluegrass, rabbitbrush, Wyoming big sagebrush

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Filiran Soil**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor

##### **Buffaran Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

##### **Orovada Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

##### **Filiran Soil**

*Range seeding:* Poor—small stones, excess sodium  
*Roadfill:* Poor—cemented pan, shrink-swell, low strength  
*Topsoil:* Poor—too clayey, small stones, excess sodium  
*Daily cover for landfill:* Poor—cemented pan, hard to pack  
*Shallow excavations:* Severe—cemented pan  
*Local roads and streets:* Severe—shrink-swell, low strength  
*Pond reservoir areas:* Moderate—cemented pan, slope  
*Embankments, dikes, and levees:* Severe—excess sodium  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

##### **Buffaran Soil**

*Range seeding:* Poor—droughty, rooting depth  
*Roadfill:* Poor—cemented pan, shrink-swell, low strength  
*Topsoil:* Poor—cemented pan, too clayey, small stones  
*Daily cover for landfill:* Poor—cemented pan, hard to pack  
*Shallow excavations:* Severe—cemented pan  
*Local roads and streets:* Severe—cemented pan, shrink-swell, low strength  
*Pond reservoir areas:* Severe—cemented pan  
*Embankments, dikes, and levees:* Severe—thin layer  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

##### **Orovada Soil**

*Range seeding:* Fair—too arid  
*Roadfill:* Good  
*Topsoil:* Fair—small stones, thin layer  
*Daily cover for landfill:* Good  
*Shallow excavations:* Slight  
*Local roads and streets:* Moderate—frost action  
*Pond reservoir areas:* Moderate—seepage, slope  
*Embankments, dikes, and levees:* Severe—piping  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Filiran and Buffaran soils—

Vlls, nonirrigated; Orovada soil—Ile, irrigated, and Vlc, nonirrigated

*Range site:* Filiran, Buffaran, and Orovada soils—028B010N; Inclusions 1 and 2—028B010N

## **680—Skullwak-Umberland-Wendane association**

*Positions on landscape:* Bolson floors

### **Composition**

*Major components:*

Skullwak silt loam, frequently flooded, 0 to 2 percent slopes—35 percent

Umberland silt loam, occasionally flooded, 0 to 2 percent slopes—35 percent

Wendane silt loam, frequently flooded, 0 to 2 percent slopes—15 percent

*Contrasting inclusions:*

Playas—7 percent

Batan silt loam, 0 to 2 percent slopes—5 percent

Dune land, clay—3 percent

### **Characteristics of the Skullwak Soil**

*Classification:* Aerlic Halaquepts, fine, montmorillonitic (calcareous), mesic

*Positions on landscape:* The higher lake plains

*Parent material:* Lacustrine sediment

*Slope:* 0 to 2 percent

*Elevation:* 5,600 to 5,700 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Inland saltgrass, Nuttall alkaligrass, alkali rabbitbrush, rubber rabbitbrush

### **Typical Profile**

*Depth:* 0 to 10 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Hard, friable

*Reaction:* Very strongly alkaline

*Salinity:* 16 to 40 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

*Depth:* 10 to 60 inches

*Texture:* Silty clay loam, silty clay

*Structure:* Massive

*Consistence:* Very hard, very firm

*Reaction:* Moderately alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

### **Soil and Water Features**

*Depth to a seasonal high water table:* 18 to 36 inches

*Frequency of flooding:* Frequent for brief periods in December through June

*Permeability:* Very slow

*Available water capacity:* 11 to 12 inches

*Water-supplying capacity:* 10 inches

*Runoff:* Slow

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—4L

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Moderate

### **Characteristics of the Umberland Soil**

*Classification:* Aerlic Halaquepts, fine, montmorillonitic (calcareous), mesic

*Positions on landscape:* The lower lake plains with coppice mounds

*Parent material:* Silty lacustrine sediment derived from various kinds of rock

*Slope:* 0 to 2 percent

*Elevation:* 5,600 to 5,700 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Black greasewood, rubber rabbitbrush, basin wildrye

### **Typical Profile**

*Depth:* 0 to 7 inches

*Texture:* Silt loam

*Structure:* Granular

*Consistence:* Slightly hard, friable

*Reaction:* Very strongly alkaline

*Salinity:* 40 to 60 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

*Depth:* 7 to 60 inches

*Texture:* Silty clay, silty clay loam

*Structure:* Angular blocky

*Consistence:* Hard, firm

*Reaction:* Very strongly alkaline

*Salinity:* 20 to 40 millimhos per centimeter

*Sodicity (SAR):* 30 to 46

### **Soil and Water Features**

*Depth to a seasonal high water table:* 30 to 60 inches

*Frequency of flooding:* Occasional for long periods in December through June

*Permeability:* Very slow

*Available water capacity:* 9 to 12 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Very slow

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.43; T value—5;  
wind erodibility group—4L  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* High  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* High

### **Characteristics of the Wendane Soil**

*Classification:* Aeris Halaquepts, fine-silty, mixed  
(calcareous), mesic  
*Positions on landscape:* Alluvial flats  
*Parent material:* Silty alluvium derived from volcanic  
rock, tuff, loess, and ash  
*Slope:* 0 to 2 percent  
*Elevation:* 5,600 to 5,700 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Black greasewood, basin  
wildrye

### **Typical Profile**

*Depth:* 0 to 7 inches  
*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 30 to 50 millimhos per centimeter  
*Sodicity (SAR):* 13 to 25  
*Depth:* 7 to 18 inches  
*Texture:* Silt loam, very fine sandy loam  
*Structure:* Subangular blocky  
*Consistence:* Soft, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 16 to 30 millimhos per centimeter  
*Sodicity (SAR):* 46 to 60  
*Depth:* 18 to 60 inches  
*Texture:* Stratified silt loam to clay loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 16 to 30 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46

### **Soil and Water Features**

*Depth to a seasonal high water table:* 30 to 48 inches  
*Frequency of flooding:* Frequent for brief to long periods  
in December through June  
*Permeability:* Moderately slow  
*Available water capacity:* 11 to 12.5 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Very slow  
*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.55; T value—5;  
wind erodibility group—4L  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* High

### **Contrasting Inclusions**

#### **Inclusion 1**

*Positions on landscape:* Sink areas  
*Distinctive present vegetation:* None

#### **Inclusion 2**

*Classification:* Durorthidic Torriorthents, fine-silty, mixed  
(calcareous), mesic  
*Positions on landscape:* Dissected lake plain remnants  
*Distinctive present vegetation:* Black greasewood,  
shadscale, bud sagebrush

#### **Inclusion 3**

*Positions on landscape:* Near Playas  
*Distinctive present vegetation:* None

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Skullwak Soil**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor  
*Wetland plants:* Poor  
*Shallow water areas:* Poor

#### **Umbertland Soil**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor  
*Wetland plants:* Poor  
*Shallow water areas:* Poor

#### **Wendane Soil**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor  
*Wetland plants:* Poor  
*Shallow water areas:* Poor

### **Suitability and Limitations for Selected Uses**

#### **Skullwak Soil**

*Range seeding:* Poor—excess salt, excess sodium  
*Roadfill:* Poor—shrink-swell, low strength  
*Topsoil:* Poor—too clayey, excess salt  
*Daily cover for landfill:* Poor—too clayey, hard to pack  
*Shallow excavations:* Severe—wetness  
*Local roads and streets:* Severe—shrink-swell, low  
strength, flooding  
*Pond reservoir areas:* Slight  
*Embankments, dikes, and levees:* Severe—wetness,  
excess salt

*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Umbreland Soil**

*Range seeding:* Poor—excess salt, excess sodium, too crusty  
*Roadfill:* Poor—low strength, shrink-swell  
*Topsoil:* Poor—excess salt, excess sodium, too clayey  
*Daily cover for landfill:* Poor—too clayey, hard to pack, excess salt  
*Shallow excavations:* Moderate—too clayey, wetness, flooding  
*Local roads and streets:* Severe—low strength, flooding, shrink-swell  
*Pond reservoir areas:* Slight  
*Embankments, dikes, and levees:* Severe—excess salt, excess sodium  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Wendane Soil**

*Range seeding:* Poor—excess salt, excess sodium  
*Roadfill:* Poor—low strength  
*Topsoil:* Poor—excess salt, excess sodium  
*Daily cover for landfill:* Poor—excess salt, excess sodium  
*Shallow excavations:* Moderate—wetness, flooding  
*Local roads and streets:* Severe—flooding, frost action  
*Pond reservoir areas:* Moderate—seepage  
*Embankments, dikes, and levees:* Severe—excess salt, excess sodium  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Skullwak, Umbreland, and Wendane soils—VIIw, nonirrigated  
*Range site:* Skullwak soil—024X044N; Umbreland soil—024X011N; Wendane soil—024X007N; Inclusion 1—none; Inclusion 2—024X003N; Inclusion 3—none

### **683—Ocala-Sonoma-Paranat association**

*Positions on landscape:* Flood plains, alluvial flats

#### **Composition**

*Major components:*

Ocala silt loam, occasionally flooded, 0 to 2 percent slopes—40 percent  
 Sonoma silt loam, occasionally flooded, strongly saline, 0 to 2 percent slopes—25 percent  
 Paranat silt loam, strongly saline, 0 to 2 percent slopes—20 percent

#### **Contrasting inclusions:**

Aquic Torriorthents, fine-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—8 percent  
 Aeris Halaquepts, fine-silty, mixed, mesic, 0 to 2 percent slopes—5 percent  
 Durorthidic Torriorthents, coarse-silty, mixed (calcareous), mesic, 2 to 4 percent slopes—2 percent

#### **Characteristics of the Ocala Soil**

*Classification:* Aeris Halaquepts, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Alluvial flats

*Parent material:* Mixed silty alluvium that includes volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 5,700 to 5,900 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Black greasewood, rubber rabbitbrush, basin wildrye, alkali sacaton

#### **Typical Profile**

*Depth:* 0 to 4 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Very strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 30 to 46

*Depth:* 4 to 36 inches

*Texture:* Silt loam, silty clay loam

*Structure:* Massive

*Consistence:* Hard, brittle

*Reaction:* Strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 20 to 46

*Depth:* 36 to 60 inches

*Texture:* Silt loam, silty clay loam

*Structure:* Massive

*Consistence:* Very hard, very firm

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 20 to 35

#### **Soil and Water Features**

*Depth to a seasonal high water table:* 42 to 60 inches

*Frequency of flooding:* Occasional for brief to long periods in February through May

*Permeability:* Slow

*Available water capacity:* 11 to 12 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Very slow  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.43; T value—5;  
 wind erodibility group—4L  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* High

### **Characteristics of the Sonoma Soil**

*Classification:* Aerlic Fluvaquents, fine-silty, mixed  
 (calcareous), mesic  
*Positions on landscape:* Stream flood plains  
*Parent material:* Mixed silty alluvium that includes  
 volcanic ash  
*Slope:* 0 to 2 percent  
*Elevation:* 5,700 to 5,900 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 50 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Alkali sacaton, alkali  
 cordgrass, inland saltgrass, basin wildrye

### **Typical Profile**

*Depth:* 0 to 12 inches  
*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 16 to 30 millimhos per centimeter  
*Sodicity (SAR):* 13 to 25  
*Depth:* 12 to 60 inches  
*Texture:* Silt loam, silty clay loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 8 millimhos per centimeter  
*Sodicity (SAR):* 5 to 13

### **Soil and Water Features**

*Depth to a seasonal high water table:* 18 to 36 inches  
*Frequency of flooding:* Occasional for brief to long  
 periods in February through June  
*Permeability:* Moderately slow  
*Available water capacity:* 11 to 12 inches  
*Water-supplying capacity:* 10 inches  
*Runoff:* Slow  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.43; T value—5;  
 wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* High

### **Characteristics of the Paranat Soil**

*Classification:* Fluvaquent Haplaquolls, fine-silty, mixed  
 (calcareous), mesic  
*Positions on landscape:* Adjacent to channels and  
 depressional areas  
*Parent material:* Silty fluvial deposits  
*Slope:* 0 to 2 percent  
*Elevation:* 5,700 to 5,900 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Alkali sacaton, alkali  
 cordgrass, alkali bluegrass, western wheatgrass

### **Typical Profile**

*Depth:* 0 to 11 inches  
*Texture:* Silt loam  
*Structure:* Granular  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 16 to 30 millimhos per centimeter  
*Sodicity (SAR):* 13 to 20  
*Depth:* 11 to 60 inches  
*Texture:* Silt loam, silty clay loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 5 to 13

### **Soil and Water Features**

*Depth to a seasonal high water table:* 18 to 42 inches  
*Frequency of flooding:* Frequent for brief to long periods  
 in December through June  
*Permeability:* Moderately slow  
*Available water capacity:* 11 to 12 inches  
*Water-supplying capacity:* 12 inches  
*Runoff:* Slow  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.55; T value—5;  
 wind erodibility group—4L  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* High

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Aquic Torriorthents, fine-silty, mixed  
 (calcareous), mesic  
*Positions on landscape:* Flood plain remnants  
*Distinctive present vegetation:* Basin wildrye, basin big  
 sagebrush, black greasewood



**Inclusion 2**

*Classification:* Aeris Halaquepts, fine-silty, mixed, mesic  
*Positions on landscape:* Stream flood plain remnants, braided channels

*Distinctive present vegetation:* Basin wildrye, inland saltgrass, basin big sagebrush

**Inclusion 3**

*Classification:* Durorthidic Torriorthents, coarse-silty, mixed (calcareous), mesic

*Positions on landscape:* Fan skirt margins adjacent to alluvial flats and flood plains

*Distinctive present vegetation:* Wyoming big sagebrush, rubber rabbitbrush, black greasewood

**Major Current Uses**

Livestock grazing, wildlife habitat, native pasture

**Suitability for Wildlife Habitat Elements****Ocala Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

*Wetland plants:* Fair

*Shallow water areas:* Fair

**Sonoma Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

*Wetland plants:* Fair

*Shallow water areas:* good

**Paranat Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

*Wetland plants:* Good

*Shallow water areas:* Fair

**Suitability and Limitations for Selected Uses****Ocala Soil**

*Range seeding:* Poor—excess salt, excess sodium

*Roadfill:* Poor—low strength

*Topsoil:* Poor—excess salt, excess sodium

*Daily cover for landfill:* Poor—excess salt, excess sodium

*Shallow excavations:* Moderate—wetness, flooding

*Local roads and streets:* Severe—low strength, flooding, frost action

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Sonoma Soil**

*Range seeding:* Poor—excess salt

*Roadfill:* Poor—low strength

*Topsoil:* Fair—excess salt, too clayey

*Daily cover for landfill:* Fair—too clayey, wetness

*Shallow excavations:* Severe—wetness

*Local roads and streets:* Severe—low strength, frost action, flooding

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—wetness, excess salt

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Paranat Soil**

*Range seeding:* Poor—excess salt

*Roadfill:* Poor—low strength

*Topsoil:* Poor—excess salt

*Daily cover for landfill:* Fair—too clayey, wetness

*Shallow excavations:* Severe—wetness

*Local roads and streets:* Severe—low strength, frost action, flooding

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—piping, excess salt, wetness

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Restrictive Features for Selected Practices****Sonoma Soil**

*Drainage:* Frost action, flooding

*Irrigation:* Wetness, erodes easily

*Terraces and diversions:* Wetness, erodes easily

**Paranat Soil**

*Drainage:* Flooding, frost action, excess salt

*Irrigation:* Wetness, erodes easily, flooding

*Terraces and diversions:* Erodes easily, wetness

**Interpretive Groups**

*Land capability classification:* Ocala, Sonoma, and Paranat soils—VIIw, nonirrigated

*Range site:* Ocala soil—024X007N; Sonoma and Paranat soils—024X009N; Inclusion 1—024X006N; Inclusion 2—024X010N; Inclusion 3—024X022N

**700—Orovada-Rasille-Wholan association**

*Positions on landscape:* Piedmont slopes

**Composition**

*Major components:*

Orovada fine sandy loam, 0 to 2 percent slopes—35 percent

Rasille silt loam, 0 to 2 percent slopes—30 percent

Wholan silt loam, 0 to 2 percent slopes—20 percent

*Contrasting inclusions:*

Duric Haplargids, loamy-skeletal, mixed, mesic, 0 to 2 percent slopes—7 percent

Aquic Duric Haploxerolls, fine-loamy, mixed, mesic, 0 to 2 percent slopes—4 percent

Xerollic Camborthids, sandy-skeletal, mixed, mesic, 0 to 4 percent slopes—2 percent

Cumulic Haploxerolls, loamy-skeletal, mixed, mesic, 0 to 2 percent slopes—2 percent

### **Characteristics of the Orovada Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Inset fan remnants

*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 0 to 2 percent

*Elevation:* 5,900 to 6,300 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

### **Typical Profile**

*Depth:* 0 to 8 inches

*Texture:* Fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 8 to 26 inches

*Texture:* Fine sandy loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 26 to 61 inches

*Texture:* Stratified fine sandy loam to silt loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 9 to 11 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Rasille Soil**

*Classification:* Durixerollic Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Fan skirts

*Parent material:* Silty alluvium derived from loess and various kinds of rock

*Slope:* 0 to 2 percent

*Elevation:* 5,900 to 6,300 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bottlebrush squirreltail, Indian ricegrass, needlegrass, Wyoming big sagebrush

### **Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 15 inches

*Texture:* Silt loam

*Structure:* Prismatic

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 15 to 60 inches

*Texture:* Silt loam, very fine sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Rare

*Permeability:* Moderate

*Available water capacity:* 10 to 12 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

### **Characteristics of the Wholan Soil**

*Classification:* Typic Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Inset fans

*Parent material:* Loess mantle over silty alluvium

*Slope:* 0 to 2 percent

*Elevation:* 5,900 to 6,300 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, bluegrass, winterfat

### **Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 60 inches

*Texture:* Silt loam, very fine sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Rare

*Permeability:* Moderate

*Available water capacity:* 10 to 11 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Duric Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Beach terrace remnants

*Distinctive present vegetation:* Shadscale, bottlebrush squirreltail, halogeton

#### **Inclusion 2**

*Classification:* Aquic Duric Haploxerolls, fine-loamy, mixed, mesic

*Positions on landscape:* Fan skirt margins

*Distinctive present vegetation:* Basin wildrye, basin big sagebrush, black greasewood

#### **Inclusion 3**

*Classification:* Xerollic Camborthids, sandy-skeletal, mixed, mesic

*Positions on landscape:* Offshore bars

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Inclusion 4**

*Classification:* Cumulic Haploxerolls, loamy-skeletal, mixed, mesic

*Positions on landscape:* Banks adjacent to deeply entrenched channels

*Distinctive present vegetation:* Basin wildrye, basin big sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Orovada Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Rasille Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Wholan Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

### **Suitability and Limitations for Selected Uses**

#### **Orovada Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Fair—small stones, thin layer

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Rasille Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Fair—excess salt

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—flooding, frost action

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Wholan Soil**

*Range seeding:* Fair—too arid, excess salt

*Roadfill:* Good

*Topsoil:* Poor—excess salt

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—flooding

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Restrictive Features for Selected Practices**

##### **Rasille Soil**

*Drainage:* Deep to water

*Irrigation:* Erodes easily, excess salt

*Terraces and diversions:* Erodes easily

##### **Wholan Soil**

*Drainage:* Deep to water

*Irrigation:* Erodes easily

*Terraces and diversions:* Erodes easily

#### **Interpretive Groups**

*Land capability classification:* Orovada and Wholan soils—IIc, irrigated, and VIc, nonirrigated; Rasille soil—IIc, irrigated, and VIc, nonirrigated

*Range site:* Orovada and Rasille soils—028B010N; Wholan soil—024X004N; Inclusion 1—024X002N; Inclusion 2—024X006N; Inclusion 3—028B010N; Inclusion 4—028B003N

### **701—Orovada fine sandy loam, 2 to 4 percent slopes**

*Positions on landscape:* Fan skirts, inset fans

#### **Composition**

*Major component:*

Orovada fine sandy loam, 2 to 4 percent slopes—85 percent

*Contrasting inclusions:*

Broyles very fine sandy loam, 2 to 4 percent slopes—5 percent

Creemon silt loam, 2 to 4 percent slopes—5 percent

Davey fine sandy loam, 2 to 4 percent slopes—5 percent

### **Characteristics of the Orovada Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Fan skirts, inset fans

*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 4,800 to 5,200 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

#### **Typical Profile**

*Depth:* 0 to 8 inches

*Texture:* Fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 8 to 20 inches

*Texture:* Fine sandy loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 20 to 60 inches

*Texture:* Stratified fine sandy loam to silt loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 9 to 11 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* The higher fan skirt remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush

#### **Inclusion 2**

*Classification:* Duric Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* The slightly dissected, lower inset fans

*Distinctive present vegetation:* Shadscale, bud sagebrush

#### **Inclusion 3**

*Classification:* Xerollic Camborthids, sandy, mixed, mesic

*Positions on landscape:* Sand sheets

*Distinctive present vegetation:* Indian ricegrass, needlegrass, Wyoming big sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Fair—small stones, thin layer

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Orovada soil—Ile, irrigated, and VIc, nonirrigated

*Range site:* Orovada soil—028B010N; Inclusions 1 and 2—024X002N; Inclusion 3—024X017N

## **702—Orovada-Creemon association**

*Positions on landscape:* Fan skirts, inset fans

### **Composition**

*Major components:*

Orovada fine sandy loam, 2 to 4 percent slopes—55 percent

Creemon fine sandy loam, strongly saline, 0 to 2 percent slopes—30 percent

*Contrasting inclusions:*

Durixerollic Haplargids, loamy-skeletal, mixed, mesic, 0 to 4 percent slopes—8 percent

Duric Camborthids, coarse-loamy, mixed, mesic, 0 to 4 percent slopes—4 percent

Typic Camborthids, loamy-skeletal, mixed, mesic, 0 to 4 percent slopes—3 percent

### **Characteristics of the Orovada Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Broad inset fans

*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 5,500 to 6,100 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

### **Typical Profile**

*Depth:* 0 to 8 inches

*Texture:* Fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 8 to 20 inches

*Texture:* Fine sandy loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 20 to 60 inches

*Texture:* Stratified fine sandy loam to silt loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 9.0 to 10.5 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.43; T value—5;  
wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Creemon Soil**

*Classification:* Duric Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Fan skirts

*Parent material:* Mixed silty alluvium that includes volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 5,500 to 5,700 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Shadscale, bud sagebrush, black greasewood, Indian ricegrass

### **Typical Profile**

*Depth:* 0 to 10 inches

*Texture:* Fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 10 to 20

*Depth:* 10 to 15 inches

*Texture:* Silt loam, very fine sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

*Depth:* 15 to 45 inches

*Texture:* Stratified very fine sandy loam to silt loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 13 to 30

*Depth:* 45 to 60 inches

*Texture:* Stratified gravelly very fine sandy loam to fine sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 10 to 11 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.32; T value—5;  
wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Fan skirt margins bordering fan piedmont remnants

*Distinctive present vegetation:* Basin wildrye, basin big sagebrush

#### **Inclusion 2**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Fan skirt margins bordering alluvial flat

*Distinctive present vegetation:* Fourwing saltbush, winterfat, bud sagebrush

#### **Inclusion 3**

*Classification:* Typic Camborthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Areas adjacent to active channels

*Distinctive present vegetation:* Shadscale, bud sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Orovada Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Creemon Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

### **Suitability and Limitations for Selected Uses**

#### **Orovada Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Fair—small stones, thin layer

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Creemon Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium

*Roadfill:* Good

*Topsoil:* Poor—excess salt

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Slight

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping, excess salt

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Restrictive Features for Selected Practices**

##### **Creemon Soil**

*Drainage:* Deep to water

*Irrigation:* Erodes easily, excess salt, soil blowing

*Terraces and diversions:* Erodes easily, soil blowing

#### **Interpretive Groups**

*Land capability classification:* Orovada soil—Ile, irrigated, and Vlc, nonirrigated; Creemon soil—IIs, irrigated, and VIIs, nonirrigated

*Range site:* Orovada soil—028B010N; Creemon soil—024X003N; Inclusion 1—024X006N; Inclusion 2—028B014N; Inclusion 3—024X002N

### **703—Orovada fine sandy loam, 0 to 2 percent slopes**

*Positions on landscape:* Inset fans

#### **Composition**

*Major component:*

Orovada fine sandy loam, 0 to 2 percent slopes—85 percent

*Contrasting inclusions:*

Chedehap sandy loam, 0 to 2 percent slopes—10 percent

Xeric Torriorthents, loamy-skeletal, mixed, mesic—3 percent

Durixerollic Camborthids, coarse-loamy, mixed, mesic—2 percent

#### **Characteristics of the Orovada Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Inset fans

*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 0 to 2 percent

*Elevation:* 5,800 to 6,200 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

#### **Typical Profile**

*Depth:* 0 to 8 inches

*Texture:* Fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 8 to 20 inches

*Texture:* Fine sandy loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 20 to 65 inches

*Texture:* Stratified fine sandy loam to silt loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Rare

*Permeability:* Moderate

*Available water capacity:* 9.0 to 10.5 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Xerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* The lower inset fans

*Distinctive present vegetation:* Spiny hopsage, needlegrass, Wyoming big sagebrush

#### **Inclusion 2**

*Classification:* Xeric Torriorthents, loamy-skeletal, mixed, mesic

*Positions on landscape:* The lower areas adjacent to channels

*Distinctive present vegetation:* Basin wildrye, basin big sagebrush

#### **Inclusion 3**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* The higher channel banks

*Distinctive present vegetation:* Basin wildrye, western wheatgrass, basin big sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Fair—small stones, thin layer

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—frost action, flooding

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Orovada soil—IIC, irrigated, and VIc, nonirrigated

*Range site:* Orovada soil—028B010N; Inclusion 1—028B052N; Inclusion 2—028B009N; Inclusion 3—024X006N

## **704—Orovada-McConnel association**

*Positions on landscape:* Fan piedmonts, fan skirts

### **Composition**

*Major components:*

Orovada fine sandy loam, 2 to 4 percent slopes—50 percent

McConnel gravelly fine sandy loam, 2 to 4 percent slopes—35 percent

*Contrasting inclusions:*

Duric Camborthids, coarse-loamy, mixed, mesic, 0 to 2 percent slopes—6 percent

Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 0 to 4 percent slopes—5 percent

Fluventic Haploxerolls, loamy-skeletal, mixed, mesic, 0 to 2 percent slopes—4 percent

### **Characteristics of the Orovada Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Fan skirts, the lower inset fans

*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 6,000 to 6,300 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

### **Typical Profile**

*Depth:* 0 to 8 inches

*Texture:* Fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 8 to 20 inches

*Texture:* Fine sandy loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 20 to 65 inches

*Texture:* Stratified fine sandy loam to silt loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 9.0 to 10.5 inches

*Water-supplying capacity:* 8 inches



*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.43; T value—5;  
 wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

### **Characteristics of the McConnel Soil**

*Classification:* Xerollic Camborthids, sandy-skeletal, mixed, mesic  
*Positions on landscape:* Beach terraces, the higher inset fan remnants  
*Parent material:* Alluvium that includes some loess and volcanic ash over lacustrine sediment  
*Slope:* 2 to 4 percent  
*Elevation:* 6,000 to 6,300 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bottlebrush squirreltail, bluegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 20 percent pebbles  
*Depth:* 0 to 6 inches  
*Texture:* Gravelly fine sandy loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 6 to 12 inches  
*Texture:* Fine sandy loam, loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 12 to 60 inches  
*Texture:* Stratified very gravelly sandy loam to extremely gravelly coarse sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately rapid over very rapid

*Available water capacity:* 2.9 to 4.2 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.32; T value—2;  
 wind erodibility group—4  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—moderate  
*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* The lower margins of fan skirts  
*Distinctive present vegetation:* Bud sagebrush, bottlebrush squirreltail, winterfat

#### **Inclusion 2**

*Classification:* Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic  
*Positions on landscape:* Fan drainageways  
*Distinctive present vegetation:* Wyoming big sagebrush

#### **Inclusion 3**

*Classification:* Fluventic Haploxerolls, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Intermountain valley fans and drainageways  
*Distinctive present vegetation:* Basin big sagebrush, rubber rabbitbrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Orovada Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### **McConnel Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Orovada Soil**

*Range seeding:* Fair—too arid  
*Roadfill:* Good  
*Topsoil:* Fair—small stones, thin layer  
*Daily cover for landfill:* Good  
*Shallow excavations:* Slight  
*Local roads and streets:* Moderate—frost action  
*Pond reservoir areas:* Moderate—seepage, slope  
*Embankments, dikes, and levees:* Severe—piping  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

**McConnel Soil***Range seeding:* Fair—too arid, droughty*Roadfill:* Good*Topsoil:* Poor—too sandy, small stones, area reclaim*Daily cover for landfill:* Poor—seepage, too sandy, small stones*Shallow excavations:* Severe—cutbanks cave*Local roads and streets:* Slight*Pond reservoir areas:* Severe—seepage*Embankments, dikes, and levees:* Severe—seepage, excess salt*Sand:* Probable source*Gravel:* Probable source**Interpretive Groups***Land capability classification:* Orovada soil—Ile, irrigated, and VIc, nonirrigated; McConnel soil—IVe, irrigated, and VIIs, nonirrigated*Range site:* Orovada soil—028B010N; McConnel soil—024X005N; Inclusion 1—024X004N; Inclusion 2—028B010N; Inclusion 3—028B003N**705—Orovada-Valmy association***Positions on landscape:* Piedmont slopes**Composition***Major components:*

Orovada fine sandy loam, 2 to 4 percent slopes—45 percent

Valmy very fine sandy loam, 0 to 2 percent slopes—40 percent

*Contrasting inclusions:*

Gund silt loam, 0 to 2 percent slopes—7 percent

Zineb gravelly loam, 0 to 4 percent slopes—5 percent

Haploxerollic Durorthids, coarse-loamy, mixed, mesic, 2 to 4 percent slopes—3 percent

**Characteristics of the Orovada Soil***Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic*Positions on landscape:* Fan skirt remnants*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium*Slope:* 2 to 4 percent*Elevation:* 5,700 to 5,900 feet*Average annual precipitation:* About 8 inches*Average annual air temperature:* About 48 degrees F*Frost-free season:* About 110 days*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass**Typical Profile***Depth:* 0 to 8 inches*Texture:* Fine sandy loam*Structure:* Subangular blocky*Consistence:* Slightly hard, very friable*Reaction:* Neutral*Salinity:* 0 to 2 millimhos per centimeter*Sodicity (SAR):* 0 to 2*Depth:* 8 to 20 inches*Texture:* Fine sandy loam, loam*Structure:* Subangular blocky*Consistence:* Slightly hard, very friable*Reaction:* Mildly alkaline*Salinity:* 0 to 2 millimhos per centimeter*Sodicity (SAR):* 0 to 2*Depth:* 20 to 65 inches*Texture:* Stratified fine sandy loam to silt loam*Structure:* Massive*Consistence:* Slightly hard, friable*Reaction:* Moderately alkaline*Salinity:* 4 to 8 millimhos per centimeter*Sodicity (SAR):* 0 to 5**Soil and Water Features***Depth to a seasonal high water table:* More than 60 inches*Frequency of flooding:* None*Permeability:* Moderate*Available water capacity:* 9 to 11 inches*Water-supplying capacity:* 8 inches*Runoff:* Slow*Hydrologic group:* B*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—3*Hazard of erosion:* By water—slight; by wind—severe*Shrink-swell potential:* Low*Corrosivity:* To steel—high; to concrete—low*Potential for frost action:* Moderate**Characteristics of the Valmy Soil***Classification:* Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic*Positions on landscape:* Inset fans, fan skirts*Parent material:* Loess cap that is high in content of volcanic ash over mixed alluvium*Slope:* 0 to 2 percent*Elevation:* 5,700 to 5,900 feet*Average annual precipitation:* About 8 inches*Average annual air temperature:* About 50 degrees F*Frost-free season:* About 110 days*Dominant present vegetation:* Basin wildrye, black greasewood, basin big sagebrush**Typical Profile***Depth:* 0 to 3 inches*Texture:* Very fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

*Depth:* 3 to 43 inches

*Texture:* Fine sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

*Depth:* 43 to 66 inches

*Texture:* Gravelly sand, very gravelly sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Moderately alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 13 to 46

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately rapid

*Available water capacity:* 5 to 7 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.43; T value—4; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Aquic Durorthidic Torriorthents, fine-silty over clayey, mixed, nonacid, mesic

*Positions on landscape:* Alluvial flats

*Distinctive present vegetation:* Basin big sagebrush, black greasewood

#### **Inclusion 2**

*Classification:* Durixerollic Camborthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Narrow, higher inset fans

*Distinctive present vegetation:* Indian ricegrass, Wyoming big sagebrush

#### **Inclusion 3**

*Classification:* Haploxerollic Durorthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Fan piedmont remnants

*Distinctive present vegetation:* Wyoming big sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Orovada Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Valmy Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

### **Suitability and Limitations for Selected Uses**

#### **Orovada Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Fair—small stones, thin layer

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Valmy Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Fair—small stones, thin layer

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Moderate—thin layer, seepage, piping

*Sand:* Probable source

*Gravel:* Probable source

### **Interpretive Groups**

*Land capability classification:* Orovada soil—Ile, irrigated, and VIc, nonirrigated; Valmy soil—IIs, irrigated, and VIIc, nonirrigated

*Range site:* Orovada soil—028B010N; Valmy soil—024X022N; Inclusion 1—024X006N; Inclusions 2 and 3—028B010N

### **740—Playas**

*Positions on landscape:* Basin floors

### **Composition**

*Major component:*

Playas—100 percent

**Characteristics of the Playas**

*Positions on landscape:* Depressions and sink areas on basin floors

*Parent material:* Lacustrine sediment veneered by fine-textured sediment

*Frequency of flooding:* Frequent for brief to long periods in September through July

*Runoff:* Ponded

*Hydrologic group:* D

**Interpretive Groups**

*Land capability classification:* VIIIw, nonirrigated

*Range site:* None

**751—Poorcal-Lopwash association**

*Positions on landscape:* Inset fans

**Composition**

*Major components:*

Poorcal loam, 0 to 4 percent slopes—55 percent

Lopwash loam, 0 to 4 percent slopes—40 percent

*Contrasting inclusions:*

Bubus loam, 0 to 4 percent slopes—2 percent

Durixerollic Haplargids, fine-loamy, mixed, frigid, 0 to 4 percent slopes—2 percent

Shipley fine sandy loam, occasionally flooded, 0 to 4 percent slopes—1 percent

**Characteristics of the Poorcal Soil**

*Classification:* Durixerollic Calciorthids, coarse-loamy, mixed, frigid

*Positions on landscape:* Broad inset fans

*Parent material:* Alluvium that is derived from sedimentary rock and includes loess and volcanic ash

*Slope:* 0 to 4 percent

*Elevation:* 6,200 to 6,800 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 46 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, Wyoming big sagebrush

**Typical Profile**

*Rock fragments on surface:* 5 percent pebbles

*Depth:* 0 to 9 inches

*Texture:* Loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 9 to 30 inches

*Texture:* Loam, gravelly sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 30 to 62 inches

*Texture:* Very gravelly loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 4.5 to 6.0 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.32; T value—5; wind erodibility group—4L

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

**Characteristics of the Lopwash Soil**

*Classification:* Typic Camborthids, loamy-skeletal, mixed, frigid

*Positions on landscape:* Narrow inset fans adjacent to channels

*Parent material:* Alluvium derived from various kinds of rock and loess

*Slope:* 0 to 4 percent

*Elevation:* 6,200 to 6,800 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 46 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Bottlebrush squirreltail, Indian ricegrass, shadscale, bud sagebrush

**Typical Profile**

*Depth:* 0 to 12 inches

*Texture:* Loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 12 to 60 inches

*Texture:* Very gravelly sandy loam  
*Structure:* Massive  
*Consistence:* Soft, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately rapid  
*Available water capacity:* 4.5 to 5.5 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.37; T value—5; wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic  
*Positions on landscape:* Stream terraces  
*Distinctive present vegetation:* Black greasewood

##### **Inclusion 2**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, frigid  
*Positions on landscape:* Nonburied fan piedmont remnants  
*Distinctive present vegetation:* Needlegrass, bluegrass, Wyoming big sagebrush

##### **Inclusion 3**

*Classification:* Xeric Torriorthents, coarse-loamy, mixed (calcareous), frigid  
*Positions on landscape:* Concave inset fans that are subject to run-on  
*Distinctive present vegetation:* Bottlebrush squirreltail, winterfat

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Poorcal Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

##### **Lopwash Soil**

*Wild herbaceous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Poor

#### **Suitability and Limitations for Selected Uses**

##### **Poorcal Soil**

*Range seeding:* Fair—too arid  
*Roadfill:* Good  
*Topsoil:* Poor—small stones, area reclaim  
*Daily cover for landfill:* Poor—small stones  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Moderate—frost action  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—seepage  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

##### **Lopwash Soil**

*Range seeding:* Poor—too arid  
*Roadfill:* Good  
*Topsoil:* Poor—small stones, area reclaim  
*Daily cover for landfill:* Poor—seepage, small stones  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Slight  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—seepage  
*Sand:* Probable source  
*Gravel:* Probable source

#### **Interpretive Groups**

*Land capability classification:* Poorcal and Lopwash soils—Ive, irrigated, and VIIc, nonirrigated  
*Range site:* Poorcal soil—028B010N; Lopwash soil—028B017N; Inclusion 1—024X003N; Inclusion 2—028B010N; Inclusion 3—028B013N

#### **811—Ravenswood-Itca-Walti association**

*Positions on landscape:* Mountains

#### **Composition**

##### **Major components:**

Ravenswood gravelly loam, 15 to 50 percent slopes, very stony—50 percent  
 Itca stony loam, 15 to 50 percent slopes—20 percent  
 Walti cobbly loam, 8 to 15 percent slopes—15 percent  
*Contrasting inclusions:*  
 Rock outcrop—8 percent  
 Robson very gravelly loam, 8 to 15 percent slopes—4 percent  
 Cleavage very gravelly fine sandy loam, 8 to 30 percent slopes—3 percent

#### **Characteristics of the Ravenswood Soil**

*Classification:* Typic Argixerolls, clayey-skeletal, montmorillonitic, frigid  
*Positions on landscape:* North- and east-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from metavolcanic and volcanic rock

*Slope:* 15 to 50 percent

*Elevation:* 6,200 to 8,200 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Idaho fescue, bluegrass, mountain big sagebrush, singleleaf pinyon

*Site index for singleleaf pinyon:* 55

#### **Typical Profile**

*Rock fragments on surface:* 3 percent stones and boulders, 10 percent cobbles, 65 percent pebbles

*Depth:* 0 to 9 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 9 to 13 inches

*Texture:* Very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Depth:* 13 to 36 inches

*Texture:* Very gravelly clay

*Structure:* Angular blocky

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 36 inches

*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 30 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 5 to 6 inches

*Water-supplying capacity:* 14 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.20; T value—2; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

#### **Characteristics of the Itca Soil**

*Classification:* Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* South- and west-facing side slopes of mountains

*Parent material:* Residuum derived from extrusive volcanic and pyroclastic rock

*Slope:* 15 to 50 percent

*Elevation:* 6,200 to 8,200 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Idaho fescue, bluegrass, singleleaf pinyon, Utah juniper, mountain big sagebrush

*Site index for singleleaf pinyon:* 70

#### **Typical Profile**

*Rock fragments on surface:* 5 percent cobbles, 5 percent pebbles

*Depth:* 0 to 2 inches

*Texture:* Stony loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 2 to 14 inches

*Texture:* Very cobbly clay, very gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 14 inches

*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 2.0 to 2.5 inches

*Water-supplying capacity:* 10 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—1; wind erodibility group—7

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Walti Soil**

*Classification:* Aridic Argixerolls, fine, montmorillonitic, frigid

*Positions on landscape:* Summits and shoulder slopes of mountains

*Parent material:* Colluvium and residuum derived from rhyolite, andesite, and tuff

*Slope:* 8 to 15 percent

*Elevation:* 6,800 to 8,200 feet

*Average annual precipitation:* About 14 inches  
*Average annual air temperature:* About 44 degrees F  
*Frost-free season:* About 80 days  
*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, low sagebrush

### **Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 10 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Cobbly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 4 to 10 inches

*Texture:* Clay loam, gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 10 to 30 inches

*Texture:* Clay

*Structure:* Prismatic

*Consistence:* Very hard, firm

*Reaction:* Neutral

*Depth:* 30 inches

*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 20 to 30 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Very slow

*Available water capacity:* 3.7 to 4.7 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—2; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Positions on landscape:* Scattered peaks, rimrock

*Distinctive present vegetation:* None

#### **Inclusion 2**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* The lower shoulder slopes of mountains

*Distinctive present vegetation:* Bluebunch wheatgrass, bluegrass, low sagebrush

### **Inclusion 3**

*Classification:* Lithic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Windswept crests and nose slopes of mountains

*Distinctive present vegetation:* Bluegrass, black sagebrush, low sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat, cordwood production

### **Suitability for Wildlife Habitat Elements**

#### **Ravenswood Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Itca Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Walti Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Ravenswood Soil**

*Range seeding:* Poor—erodes easily

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, too clayey, small stones

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Itca Soil**

*Range seeding:* Poor—droughty, large stones

*Roadfill:* Poor—depth to rock, large stones, slope

*Topsoil:* Poor—depth to rock, small stones, too clayey

*Daily cover for landfill:* Poor—depth to rock, too clayey, small stones

*Shallow excavations:* Severe—depth to rock, large stones, slope

*Local roads and streets:* Severe—depth to rock, large stones, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

**Walti Soil**

*Range seeding:* Poor—rooting depth, large stones  
*Roadfill:* Poor—depth to rock, shrink-swell, low strength  
*Topsoil:* Poor—too clayey, small stones  
*Daily cover for landfill:* Poor—depth to rock, hard to pack  
*Shallow excavations:* Severe—depth to rock  
*Local roads and streets:* Severe—shrink-swell, low strength  
*Pond reservoir areas:* Severe—slope  
*Embankments, dikes, and levees:* Severe—hard to pack  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Ravenswood and Itca soils—VIIe, nonirrigated; Walti soil—VIIs, nonirrigated  
*Range site:* Ravenswood and Itca soils—025X061N; Walti soil—024X027N; Inclusion 1—none; Inclusion 2—024X018N; Inclusion 3—024X016N

**812—Ravenswood-Shagnasty-Walti association**

*Positions on landscape:* Mountains

**Composition**

*Major components:*  
 Ravenswood gravelly loam, 15 to 30 percent slopes, extremely stony—40 percent  
 Shagnasty very cobbly loam, 15 to 30 percent slopes—25 percent  
 Walti very cobbly loam, 8 to 15 percent slopes—20 percent  
*Contrasting inclusions:*  
 Welch loam, drained, 2 to 8 percent slopes—5 percent  
 Aridic Argixerolls, fine-loamy, mixed, frigid, 2 to 8 percent slopes—5 percent  
 Rock outcrop—4 percent  
 Rubble land—1 percent

**Characteristics of the Ravenswood Soil**

*Classification:* Typic Argixerolls, clayey-skeletal, montmorillonitic, frigid  
*Positions on landscape:* Convex, south- and west-facing side slopes of mountains  
*Parent material:* Colluvium and residuum derived from metavolcanic and volcanic rock  
*Slope:* 15 to 30 percent  
*Elevation:* 6,000 to 7,500 feet  
*Average annual precipitation:* About 14 inches  
*Average annual air temperature:* About 42 degrees F  
*Frost-free season:* About 80 days

*Dominant present vegetation:* Idaho fescue, bluegrass, mountain big sagebrush, singleleaf pinyon  
*Site index for singleleaf pinyon:* 55

**Typical Profile**

*Rock fragments on surface:* 10 percent stones and boulders, 35 percent pebbles

*Depth:* 0 to 9 inches  
*Texture:* Gravelly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral

*Depth:* 9 to 13 inches  
*Texture:* Very gravelly clay loam  
*Structure:* Angular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Mildly alkaline

*Depth:* 13 to 36 inches  
*Texture:* Very gravelly clay  
*Structure:* Angular blocky  
*Consistence:* Hard, firm  
*Reaction:* Mildly alkaline

*Depth:* 36 inches  
*Material:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 30 to 40 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 5 to 6 inches  
*Water-supplying capacity:* 14 inches  
*Runoff:* Rapid  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.20; T value—2; wind erodibility group—6  
*Hazard of erosion:* By water—moderate; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Low

**Characteristics of the Shagnasty Soil**

*Classification:* Typic Argixerolls, fine, montmorillonitic, frigid  
*Positions on landscape:* Concave, north- and east-facing side slopes of mountains  
*Parent material:* Colluvium over residuum derived from rhyolite, andesite, or quartzite  
*Slope:* 15 to 30 percent  
*Elevation:* 6,000 to 7,500 feet  
*Average annual precipitation:* About 14 inches  
*Average annual air temperature:* About 44 degrees F



*Frost-free season:* About 80 days

*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, singleleaf pinyon

*Site index for singleleaf pinyon:* 55

### **Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 15 percent pebbles

*Depth:* 0 to 15 inches

*Texture:* Very cobbly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 15 to 36 inches

*Texture:* Clay, clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 36 to 57 inches

*Texture:* Cobbly clay loam, cobbly silty clay loam

*Structure:* Angular blocky

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 57 inches

*Material:* Weathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 50 to 60 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 7.2 to 8.5 inches

*Water-supplying capacity:* 14 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.15; T value—3; wind erodibility group—8

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Walti Soil**

*Classification:* Aridic Argixerolls, fine, montmorillonitic, frigid

*Positions on landscape:* Crests of mountains

*Parent material:* Colluvium and residuum derived from rhyolite, andesite, and tuff

*Slope:* 8 to 15 percent

*Elevation:* 6,800 to 7,500 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, low sagebrush

### **Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 20 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 4 to 10 inches

*Texture:* Clay loam, gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 10 to 30 inches

*Texture:* Clay

*Structure:* Prismatic

*Consistence:* Very hard, firm

*Reaction:* Neutral

*Depth:* 30 inches

*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 20 to 30 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Very slow

*Available water capacity:* 3.8 to 5.0 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—2; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Cumulic Haplaquolls, fine-loamy, mixed, frigid

*Positions on landscape:* Narrow intermountain drainageways

*Distinctive present vegetation:* Basin wildrye, basin big sagebrush

#### **Inclusion 2**

*Classification:* Aridic Argixerolls, fine-loamy, mixed, frigid

*Positions on landscape:* Foot slopes of mountains

*Distinctive present vegetation:* Bluebunch wheatgrass, mountain big sagebrush

**Inclusion 3**

*Positions on landscape:* Shoulder slopes and scattered peaks of mountains

*Distinctive present vegetation:* None

**Inclusion 4**

*Positions on landscape:* Below areas of Rock outcrop

*Distinctive present vegetation:* None

**Major Uses**

*Current uses:* Livestock grazing, wildlife habitat

*Potential foreseeable use:* Cordwood production

**Suitability for Wildlife Habitat Elements**

**Ravenswood Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Shagnasty Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Walti Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses**

**Ravenswood Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, too clayey, small stones

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Shagnasty Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Poor—low strength, shrink-swell

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—too clayey, hard to pack, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—low strength, slope, shrink-swell

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—thin layer, hard to pack, large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Walti Soil**

*Range seeding:* Poor—rooting depth, large stones

*Roadfill:* Poor—depth to rock, shrink-swell, low strength

*Topsoil:* Poor—too clayey, small stones

*Daily cover for landfill:* Poor—depth to rock, hard to pack

*Shallow excavations:* Severe—depth to rock

*Local roads and streets:* Severe—shrink-swell, low strength

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—hard to pack

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Ravenswood soil—VIs, nonirrigated; Shagnasty and Walti soils—VIIIs, nonirrigated

*Range site:* Ravenswood and Shagnasty soils—025X061N; Walti soil—024X027N; Inclusion 1—028B024N; Inclusion 2—028B030N; Inclusion 3—none; Inclusion 4—none

**850—Relley silt loam, 0 to 2 percent slopes**

*Positions on landscape:* Piedmont slopes

**Composition**

*Major component:*

Relley silt loam, 0 to 2 percent slopes—85 percent

*Contrasting inclusions:*

Durorithic Torriorthents, fine-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—5 percent

Batan silt loam, 0 to 2 percent slopes—4 percent

Bubus very fine sandy loam, 0 to 2 percent slopes—3 percent

Wholan very fine sandy loam, 0 to 2 percent slopes—3 percent

**Characteristics of the Relley Soil**

*Classification:* Duric Camborthids, fine-silty, mixed, mesic

*Positions on landscape:* Fan skirts

*Parent material:* Mixed alluvium that includes loess and volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 5,100 to 5,500 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bottlebrush squirreltail, Indian ricegrass, shadscale, bud sagebrush

**Typical Profile***Depth:* 0 to 8 inches*Texture:* Silt loam*Structure:* Subangular blocky*Consistence:* Slightly hard, very friable*Reaction:* Strongly alkaline*Salinity:* 0 to 2 millimhos per centimeter*Sodicity (SAR):* 0 to 2*Depth:* 8 to 16 inches*Texture:* Silt loam*Structure:* Prismatic*Consistence:* Slightly hard, very friable*Reaction:* Moderately alkaline*Salinity:* 0 to 2 millimhos per centimeter*Sodicity (SAR):* 0 to 2*Depth:* 16 to 28 inches*Texture:* Silt loam*Structure:* Massive*Consistence:* Slightly hard, very friable*Reaction:* Moderately alkaline*Salinity:* 0 to 2 millimhos per centimeter*Sodicity (SAR):* 0 to 2*Depth:* 28 to 60 inches*Texture:* Silt loam*Structure:* Massive*Consistence:* Slightly hard, friable*Reaction:* Moderately alkaline*Salinity:* 8 to 16 millimhos per centimeter*Sodicity (SAR):* 5 to 13**Soil and Water Features***Depth to a seasonal high water table:* More than 60 inches*Frequency of flooding:* None*Permeability:* Moderate*Available water capacity:* 11 to 13 inches*Water-supplying capacity:* 7 inches*Runoff:* Slow*Hydrologic group:* B*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—6*Hazard of erosion:* By water—slight; by wind—slight*Shrink-swell potential:* Moderate*Corrosivity:* To steel—high; to concrete—moderate*Potential for frost action:* Low**Contrasting Inclusions****Inclusion 1***Classification:* Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic*Positions on landscape:* Slightly convex fan skirts*Distinctive present vegetation:* Shadscale, bud sagebrush**Inclusion 2***Classification:* Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic*Positions on landscape:* Alluvial flat remnants*Distinctive present vegetation:* Black greasewood, shadscale, bud sagebrush**Inclusion 3***Classification:* Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic*Positions on landscape:* Alluvial flat remnants near channels*Distinctive present vegetation:* Black greasewood, shadscale, bud sagebrush**Inclusion 4***Classification:* Typic Camborthids, coarse-silty, mixed, mesic*Positions on landscape:* Inset fans*Distinctive present vegetation:* Indian ricegrass, winterfat, halogeton**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements***Wild herbaceous plants (nonirrigated):* Poor*Shrubs (nonirrigated):* Poor**Suitability and Limitations for Selected Uses***Range seeding:* Poor—too arid*Roadfill:* Fair—low strength, shrink-swell*Topsoil:* Fair—thin layer*Daily cover for landfill:* Good*Shallow excavations:* Slight*Local roads and streets:* Moderate—low strength, shrink-swell*Pond reservoir areas:* Moderate—seepage*Embankments, dikes, and levees:* Severe—piping, excess salt*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines**Interpretive Groups***Land capability classification:* Relley soil—IIc, irrigated; VIIc, nonirrigated*Range site:* Relley soil—024X002N; Inclusion 1—024X002N; Inclusions 2, 3, and 4—024X003N**854—Relley silt loam, frequently flooded, 0 to 2 percent slopes***Positions on landscape:* Piedmont slopes

### **Composition**

#### *Major component:*

Relley silt loam, frequently flooded, 0 to 2 percent slopes—85 percent

#### *Contrasting inclusions:*

Durorthidic Xeric Torriorthents, coarse-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—9 percent

Duric Camborthids, fine-loamy, mixed, mesic, 0 to 2 percent slopes—4 percent

Creemon silt loam, 0 to 2 percent slopes—2 percent

### **Characteristics of the Relley Soil**

*Classification:* Duric Camborthids, fine-silty, mixed, mesic

*Positions on landscape:* Fan skirts

*Parent material:* Mixed alluvium that includes loess and volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 5,100 to 5,700 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bottlebrush squirreltail, Indian ricegrass, sickle saltbush

### **Typical Profile**

*Depth:* 0 to 8 inches

*Texture:* Silt loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 8 to 16 inches

*Texture:* Silt loam

*Structure:* Prismatic

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 16 to 28 inches

*Texture:* Silt loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 28 to 60 inches

*Texture:* Silt loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Frequent for very brief periods in December through June

*Permeability:* Moderate

*Available water capacity:* 11 to 12 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—moderate

*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durorthidic Xeric Torriorthents, coarse-silty, mixed (calcareous), mesic

*Positions on landscape:* Active inset fans

*Distinctive present vegetation:* Wyoming big sagebrush, black sagebrush, basin big sagebrush

#### **Inclusion 2**

*Classification:* Duric Camborthids, fine-loamy, mixed, mesic

*Positions on landscape:* Fan aprons

*Distinctive present vegetation:* Shadscale, bud sagebrush

#### **Inclusion 3**

*Classification:* Duric Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Inset fan remnants

*Dominant present vegetation:* Shadscale, bud sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

### **Suitability and Limitations for Selected Uses**

*Range seeding:* Poor—too arid

*Roadfill:* Fair—low strength, shrink-swell

*Topsoil:* Fair—thin layer

*Daily cover for landfill:* Good

*Shallow excavations:* Moderate—flooding

*Local roads and streets:* Severe—flooding

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping, excess salt

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Relley soil—IIIw, irrigated; VIIw, nonirrigated

*Range site:* Relley soil—024X012N; Inclusion 1—024X006N; Inclusions 2 and 3—024X002N

## **910—Rutab loam, 0 to 2 percent slopes**

*Positions on landscape:* Piedmont slopes

### **Composition**

*Major component:*

Rutab loam, 0 to 2 percent slopes—90 percent

*Contrasting inclusions:*

Fluventic Haploxerolls, loamy-skeletal, mixed, frigid, 0 to 4 percent slopes—5 percent

Glyphs fine sandy loam, 0 to 4 percent slopes—5 percent

### **Characteristics of the Rutab Soil**

*Classification:* Xerollic Camborthids, loamy-skeletal, mixed, frigid

*Positions on landscape:* Fan skirts

*Parent material:* Mixed alluvium

*Slope:* 0 to 2 percent

*Elevation:* 6,300 to 7,500 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 46 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Indian ricegrass, needlegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 5 percent pebbles

*Depth:* 0 to 8 inches

*Texture:* Loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 8 to 21 inches

*Texture:* Gravelly loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 21 to 60 inches

*Texture:* Extremely gravelly sandy loam

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 3.2 to 5.3 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.32; T value—5; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Fluventic Haploxerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Basin wildrye, basin big sagebrush

#### **Inclusion 2**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* Fan piedmont remnants

*Distinctive present vegetation:* Bluegrass, needlegrass, Wyoming big sagebrush, small rabbitbrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

### **Interpretive Groups**

*Land capability classification:* Rutab soil—IIIs, irrigated; VIIc, nonirrigated

*Range site:* Rutab soil—028B010N; Inclusion 1—028B003N; Inclusion 2—028B010N

### **931—Shagnasty-Roca-Rock outcrop association**

*Positions on landscape:* Mountains

#### **Composition**

*Major components:*

Shagnasty very cobbly loam, 30 to 50 percent slopes—45 percent

Roca very cobbly loam, 30 to 50 percent slopes—25 percent

Rock outcrop—15 percent

*Contrasting inclusions:*

Walti very cobbly loam, 8 to 30 percent slopes—8 percent

Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid, 15 to 50 percent slopes—5 percent

Weich loam, drained, 2 to 8 percent slopes—2 percent

#### **Characteristics of the Shagnasty Soil**

*Classification:* Typic Argixerolls, fine, montmorillonitic, frigid

*Positions on landscape:* Convex, north-, east-, and west-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from rhyolite, andesite, and quartzite

*Slope:* 30 to 50 percent

*Elevation:* 6,800 to 7,600 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, singleleaf pinyon

*Site index for singleleaf pinyon:* 55

#### **Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 15 percent pebbles

*Depth:* 0 to 15 inches

*Texture:* Very cobbly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 15 to 36 inches

*Texture:* Clay, clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 36 to 57 inches

*Texture:* Cobbly clay loam, cobbly silty clay loam

*Structure:* Angular blocky

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 57 inches

*Material:* Weathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 50 to 60 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 7.0 to 8.5 inches

*Water-supplying capacity:* 14 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.15; T value—3; wind erodibility group—8

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

#### **Characteristics of the Roca Soil**

*Classification:* Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* South-facing side slopes of mountains

*Parent material:* Residuum derived from shale and chert

*Slope:* 30 to 50 percent

*Elevation:* 6,800 to 7,500 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Bluegrass, bluebunch wheatgrass, big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 20 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Very cobbly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 4 to 24 inches

*Texture:* Very gravelly clay loam, very gravelly clay

*Structure:* Angular blocky

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 24 inches

*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Very slow

*Available water capacity:* 2.6 to 3.4 inches

*Water-supplying capacity:* 11 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—2; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Rock Outcrop**

*Positions on landscape:* Scattered peaks on mountains

*Elevation:* 7,200 to 7,700 feet

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Aridic Argixerolls, fine, montmorillonitic, frigid

*Positions on landscape:* Crests of mountains

*Distinctive present vegetation:* Idaho fescue, bluebunch wheatgrass, low sagebrush

#### **Inclusion 2**

*Classification:* Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* Mountain ridge nose slopes

*Distinctive present vegetation:* Black sagebrush, low sagebrush, bluegrass

#### **Inclusion 3**

*Classification:* Cumulic Haplaquolls, fine-loamy, mixed, frigid

*Positions on landscape:* Intermountain drainageways

*Distinctive present vegetation:* Basin wildrye, willows, basin big sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Shagnasty Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Roca Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Shagnasty Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Poor—low strength, shrink-swell, slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—too clayey, hard to pack, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—low strength, slope, shrink-swell

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—thin layer, hard to pack, large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Roca Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Shagnasty and Roca soils—VIIIs, nonirrigated; Rock outcrop—VIIIs, nonirrigated

*Range site:* Shagnasty soil—025X061N; Roca soil—024X028N; Rock outcrop—none; Inclusion 1—028B037N; Inclusion 2—028B038N; Inclusion 3—028B024N

## **932—Shagnasty-Softscrabble association**

*Positions on landscape:* Mountains

### **Composition**

*Major components:*

Shagnasty very cobbly loam, 30 to 50 percent slopes—50 percent

Softscrabble very cobbly fine sandy loam, 15 to 30 percent slopes—35 percent

*Contrasting inclusions:*

Walti extremely stony loam, 8 to 15 percent slopes—6 percent

Pachic Argixerolls, loamy-skeletal, mixed, frigid, 15 to 30 percent slopes—4 percent

Welch loam, drained, 2 to 8 percent slopes—4 percent  
Welch loam, 2 to 8 percent slopes—1 percent

### **Characteristics of the Shagnasty Soil**

*Classification:* Typic Argixerolls, fine, montmorillonitic, frigid

*Positions on landscape:* Convex side slopes of mountains

*Parent material:* Colluvium over residuum derived from rhyolite, andesite, and quartzite

*Slope:* 30 to 50 percent

*Elevation:* 6,500 to 8,500 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, singleleaf pinyon

*Site index for singleleaf pinyon:* 55

### **Typical Profile**

*Rock fragments on surface:* 40 percent stones and boulders, 30 percent cobbles, 15 percent pebbles

*Depth:* 0 to 15 inches

*Texture:* Very cobbly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 15 to 36 inches

*Texture:* Clay, clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 36 to 57 inches

*Texture:* Cobbly clay loam, cobbly silty clay loam

*Structure:* Angular blocky

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 57 inches

*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 50 to 60 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 7.2 to 8.3 inches

*Water-supplying capacity:* 14 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.15; T value—3; wind erodibility group—8

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Softscrabble Soil**

*Classification:* Pachic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Concave, north-facing side slopes of mountains in areas where snow accumulates

*Parent material:* Colluvium and residuum derived from volcanic rock

*Slope:* 15 to 30 percent

*Elevation:* 6,500 to 8,200 feet

*Average annual precipitation:* About 16 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 70 days

*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

### **Typical Profile**

*Depth:* 0 to 16 inches

*Texture:* Very cobbly fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 16 to 30 inches

*Texture:* Very cobbly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 30 to 60 inches

*Texture:* Very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 6.0 to 7.8 inches

*Water-supplying capacity:* 14 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.15; T value—5; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate



### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Aridic Argixerolls, fine, montmorillonitic, frigid

*Positions on landscape:* Stable, convex side slopes of mountains

*Distinctive present vegetation:* Idaho fescue, needlegrass, low sagebrush

#### **Inclusion 2**

*Classification:* Pachic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Side slopes of mountains in small areas where snow accumulates

*Distinctive present vegetation:* Chokecherry

#### **Inclusion 3**

*Classification:* Cumulic Haplaquolls, fine-loamy, mixed, frigid

*Positions on landscape:* Entrenched intermountain drainageways and canyon bottoms

*Distinctive present vegetation:* Basin wildrye, bluegrass, basin big sagebrush

#### **Inclusion 4**

*Classification:* Cumulic Haplaquolls, fine-loamy, mixed, frigid

*Positions on landscape:* Smooth intermountain drainageways

*Distinctive present vegetation:* Tufted hairgrass, sedge, iris, willow

### **Major Uses**

*Current uses:* Livestock grazing, wildlife habitat

*Potential foreseeable use:* Cordwood production

### **Suitability for Wildlife Habitat Elements**

#### **Shagnasty Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Softscrabble Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Shagnasty Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Poor—low strength, shrink-swell, slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—too clayey, hard to pack, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—low strength, slope, shrink-swell

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—thin layer, hard to pack, large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Softscrabble Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Fair—large stones, slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Shagnasty and

Softscrabble soils—VIIIs, nonirrigated

*Range site:* Shagnasty soil—025X061N; Softscrabble soil—024X021N; Inclusion 1—024X027N; Inclusion 2—024X035N; Inclusion 3—028B024N; Inclusion 4—025X005N

### **942—Shipley silt loam, occasionally flooded, 0 to 2 percent slopes**

*Positions on landscape:* Inset fans

### **Composition**

*Major component:*

Shipley silt loam, occasionally flooded, 0 to 2 percent slopes—90 percent

*Contrasting inclusions:*

Shipley silt loam, gravelly substratum, gullied, 0 to 4 percent slopes—5 percent

Rutab gravelly sandy loam, 0 to 4 percent slopes—5 percent

### **Characteristics of the Shipley Soil**

*Classification:* Xeric Torriorthents, coarse-loamy, mixed (calcareous), frigid

*Positions on landscape:* Inset fans

*Parent material:* Mixed alluvium that includes loess and volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 6,400 to 6,600 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, winterfat

**Typical Profile**

*Rock fragments on surface:* 5 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 5 to 41 inches

*Texture:* Silt loam, very fine sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

*Depth:* 41 to 60 inches

*Texture:* Extremely gravelly sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Moderately alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Occasional for very brief periods in January through May

*Permeability:* Moderate

*Available water capacity:* 6.5 to 9.0 inches

*Water-supplying capacity:* 11 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.49; T value—4; wind erodibility group—4L

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—moderate

*Potential for frost action:* Moderate

**Contrasting Inclusions****Inclusion 1**

*Classification:* Xeric Torriorthents, coarse-loamy, mixed (calcareous), frigid

*Positions on landscape:* Areas adjacent to recently entrenched channels

*Distinctive present vegetation:* Wyoming big sagebrush, basin wildrye

**Inclusion 2**

*Classification:* Xerollic Camborthids, loamy-skeletal, mixed, frigid

*Positions on landscape:* Inset fan remnants  
*Distinctive present vegetation:* Indian ricegrass, Wyoming big sagebrush

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

**Suitability and Limitations for Selected Uses**

*Range seeding:* Poor—excess salt, too arid, excess sodium

*Roadfill:* Good

*Topsoil:* Poor—area reclaim

*Daily cover for landfill:* Fair—thin layer

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Severe—flooding

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Probable source

*Gravel:* Probable source

**Interpretive Groups**

*Land capability classification:* Shipley soil—IIIw, irrigated; VIw, nonirrigated

*Range site:* Shipley soil—028B013N; Inclusion 1—028B009N; Inclusion 2—028B010N

**950—Silverado sandy loam, 0 to 2 percent slopes**

*Positions on landscape:* Inset fans

**Composition**

*Major component:*

Silverado sandy loam, 0 to 2 percent slopes—85 percent

*Contrasting inclusions:*

Xeric Torriorthents, coarse-loamy, mixed (calcareous), frigid, 0 to 2 percent slopes—6 percent

Xerollic Haplargids, fine-loamy, mixed, frigid, 0 to 2 percent slopes—5 percent

Typic Camborthids, loamy-skeletal, mixed, frigid, 0 to 2 percent slopes—4 percent

**Characteristics of the Silverado Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, frigid

*Positions on landscape:* Inset fans

*Parent material:* Mixed alluvium that includes volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 6,200 to 6,600 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 44 degrees F  
*Frost-free season:* About 100 days  
*Dominant present vegetation:* Indian ricegrass, needlegrass, Wyoming big sagebrush

#### **Typical Profile**

*Depth:* 0 to 2 inches  
*Texture:* Sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral  
*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 2 to 19 inches  
*Texture:* Sandy loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral  
*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 19 to 38 inches  
*Texture:* Sandy loam, gravelly sandy loam  
*Structure:* Massive  
*Consistence:* Hard, friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 38 to 60 inches  
*Texture:* Very gravelly coarse sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately rapid  
*Available water capacity:* 4.0 to 5.5 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.32; T value—3; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Xeric Torriorthents, coarse-loamy, mixed (calcareous), frigid

*Positions on landscape:* Areas adjacent to narrow active channels

*Distinctive present vegetation:* Wyoming big sagebrush, spiny hopsage

##### **Inclusion 2**

*Classification:* Xerollic Haplargids, fine-loamy, mixed, frigid

*Positions on landscape:* Fan piedmont remnants

*Distinctive present vegetation:* Wyoming big sagebrush, needlegrass

##### **Inclusion 3**

*Classification:* Typic Camborthids, loamy-skeletal, mixed, frigid

*Positions on landscape:* Inset fans in the lower areas near fan skirts

*Distinctive present vegetation:* Shadscale, black greasewood, basin wildrye

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

#### **Interpretive Groups**

*Land capability classification:* Silverado soil—IVs, irrigated; VIIc, nonirrigated

*Range site:* Silverado soil—028B010N; Inclusions 1 and 2—028B010N; Inclusion 3—024X022N

#### **990—Sonoma-Wendane association**

*Positions on landscape:* Stream flood plains, alluvial flats

#### **Composition**

*Major components:*

Sonoma silt loam, drained, occasionally flooded, 0 to 2 percent slopes—65 percent

Wendane silt loam, frequently flooded, 0 to 2 percent slopes—20 percent

*Contrasting inclusions:*

Xerollic Camborthids, loamy-skeletal, mixed, mesic, 0 to 2 percent slopes—5 percent

Durixerollic Camborthids, coarse-loamy, mixed, mesic, 0 to 4 percent slopes—5 percent

Paranat silt loam, 0 to 2 percent slopes—5 percent

**Characteristics of the Sonoma Soil**

*Classification:* Aeris Fluvaquents, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Outer margins of flood plains

*Parent material:* Silty mixed alluvium that includes volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 5,700 to 5,800 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 50 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Basin wildrye, alkali sacaton, basin big sagebrush, black greasewood

**Typical Profile**

*Depth:* 0 to 12 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

*Depth:* 12 to 60 inches

*Texture:* Silt loam, silty clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

**Soil and Water Features**

*Depth to a seasonal high water table:* 42 to 60 inches

*Frequency of flooding:* Occasional for brief to long periods in March through June

*Permeability:* Moderately slow

*Available water capacity:* 11 to 13 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Slow

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—4L

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* High

**Characteristics of the Wendane Soil**

*Classification:* Aeris Halaquepts, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Alluvial flats

*Parent material:* Silty alluvium derived from volcanic rock, tuff, loess, and volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 5,700 to 5,800 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Black greasewood, basin wildrye

**Typical Profile**

*Depth:* 0 to 7 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 30 to 50 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

*Depth:* 7 to 18 inches

*Texture:* Silt loam, very fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

*Depth:* 18 to 60 inches

*Texture:* Stratified silt loam to clay loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 25 to 35

**Soil and Water Features**

*Depth to a seasonal high water table:* 35 to 48 inches

*Frequency of flooding:* Frequent for brief to long periods in February through June

*Permeability:* Moderately slow

*Available water capacity:* 11 to 13 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Very slow

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—4L

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* High

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Xerollic Camborthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Fan skirt remnants

*Distinctive present vegetation:* Basin big sagebrush, basin wildrye

#### **Inclusion 2**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Fan skirts

*Distinctive present vegetation:* Wyoming big sagebrush, black greasewood

#### **Inclusion 3**

*Classification:* Fluvaquentic Haplaquolls, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Active flood plains adjacent to channels

*Distinctive present vegetation:* Saltgrass, alkali sacaton

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Sonoma Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

*Wetland plants:* Fair

*Shallow water areas:* Fair

#### **Wendane Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

*Wetland plants:* Poor

*Shallow water areas:* Fair

### **Suitability and Limitations for Selected Uses**

#### **Sonoma Soil**

*Range seeding:* Poor—excess salt

*Roadfill:* Poor—low strength

*Topsoil:* Fair—excess salt

*Daily cover for landfill:* Fair—too clayey

*Shallow excavations:* Moderate—wetness, flooding

*Local roads and streets:* Severe—low strength, frost action, flooding

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Moderate—wetness, piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Wendane Soil**

*Range seeding:* Poor—excess salt, excess sodium

*Roadfill:* Poor—low strength

*Topsoil:* Poor—excess salt, excess sodium

*Daily cover for landfill:* Poor—excess salt, excess sodium

*Shallow excavations:* Moderate—wetness, flooding

*Local roads and streets:* Severe—flooding, frost action

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Restrictive Features for Selected Practices**

#### **Sonoma Soil**

*Drainage:* Deep to water

*Irrigation:* Erodes easily, flooding, excess salt

*Terraces and diversions:* Erodes easily

### **Interpretive Groups**

*Land capability classification:* Sonoma soil—IIIw, irrigated, and VIw, nonirrigated; Wendane soil—VIIw, nonirrigated

*Range site:* Sonoma soil—024X006N; Wendane soil—024X007N; Inclusion 1—025X003N; Inclusion 2—024X022N; Inclusion 3—025X001N

### **998—Sonoma-Paranat association**

*Positions on landscape:* Stream flood plains

### **Composition**

*Major components:*

Sonoma silt loam, frequently flooded, 0 to 2 percent slopes—45 percent

Paranat silt loam, 0 to 2 percent slopes—20 percent

Sonoma silt loam, drained, occasionally flooded, 0 to 2 percent slopes—20 percent

*Contrasting inclusions:*

Duric Camborthids, fine-loamy, mixed, mesic, 0 to 2 percent slopes—6 percent

Durorthidic Torriorthents, fine-loamy, mixed (calcareous), mesic, 0 to 2 percent slopes—4 percent

Duric Camborthids, loamy-skeletal, mixed, mesic, 2 to 4 percent slopes—3 percent

Typic Camborthids, coarse-silty, mixed, mesic, 0 to 2 percent slopes—2 percent

### **Characteristics of the Sonoma Soil, Frequently Flooded**

*Classification:* Aeris Fluvaquents, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Smooth outer margins of broad flood plains

*Parent material:* Silty mixed alluvium that includes volcanic ash

*Slope:* 0 to 2 percent  
*Elevation:* 5,500 to 6,000 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 50 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Creeping wildrye, bluegrass, rush, sedge

#### **Typical Profile**

*Depth:* 0 to 12 inches  
*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 2 to 10

*Depth:* 12 to 60 inches  
*Texture:* Silt loam, silty clay loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* 18 to 36 inches  
*Frequency of flooding:* Frequent for brief to long periods in February through June  
*Permeability:* Moderately slow  
*Available water capacity:* 11 to 13 inches  
*Water-supplying capacity:* 11 inches  
*Runoff:* Very slow  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—4L  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* High

#### **Characteristics of the Parana Soil**

*Classification:* Fluvaquentic Haplaquolls, fine-silty, mixed (calcareous), mesic  
*Positions on landscape:* Slightly concave flood plains  
*Parent material:* Silty fluvial deposits  
*Slope:* 0 to 2 percent  
*Elevation:* 5,500 to 6,000 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Rush, sedge, creeping wildrye, bluegrass, basin wildrye

#### **Typical Profile**

*Depth:* 0 to 20 inches

*Texture:* Silt loam  
*Structure:* Granular  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

*Depth:* 20 to 48 inches  
*Texture:* Silt loam, silty clay loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 48 to 60 inches  
*Texture:* Stratified very fine sandy loam to silty clay  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

#### **Soil and Water Features**

*Depth to a seasonal high water table:* 18 to 42 inches  
*Frequency of flooding:* Frequent for brief to long periods in December through June  
*Permeability:* Moderately slow  
*Available water capacity:* 11 to 13 inches  
*Water-supplying capacity:* 12 inches  
*Runoff:* Slow  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—4L  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* High

#### **Characteristics of the Sonoma Soil, Occasionally Flooded**

*Classification:* Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic  
*Positions on landscape:* Stream terraces  
*Parent material:* Silty mixed alluvium that includes volcanic ash  
*Slope:* 0 to 2 percent  
*Elevation:* 5,500 to 6,000 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 50 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Basin wildrye, inland saltgrass, basin big sagebrush, black greasewood

#### **Typical Profile**

*Depth:* 0 to 12 inches

*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 2 to 10

*Depth:* 12 to 60 inches  
*Texture:* Silt loam, silty clay loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 8 millimhos per centimeter  
*Sodicity (SAR):* 2 to 10

#### **Soil and Water Features**

*Depth to a seasonal high water table:* 42 to 60 inches  
*Frequency of flooding:* Occasional for brief to long periods in March through June  
*Permeability:* Moderately slow  
*Available water capacity:* 11 to 13 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Very slow  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—4L  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* High

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Duric Camborthids, fine-loamy, mixed, mesic  
*Positions on landscape:* Stream terrace remnants  
*Distinctive present vegetation:* Rubber rabbitbrush, basin wildrye, black greasewood

##### **Inclusion 2**

*Classification:* Durorthidic Torriorthents, fine-loamy, mixed (calcareous), mesic  
*Positions on landscape:* Small fanettes adjacent to fan piedmont remnants  
*Distinctive present vegetation:* Basin big sagebrush, basin wildrye, rubber rabbitbrush, bluegrass

##### **Inclusion 3**

*Classification:* Duric Camborthids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Areas adjacent to channels on stream terraces  
*Distinctive present vegetation:* Rubber rabbitbrush, black greasewood, basin wildrye

##### **Inclusion 4**

*Classification:* Typic Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Fan skirts adjacent to fan piedmont remnants

*Distinctive present vegetation:* Black greasewood, basin wildrye, inland saltgrass

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Sonoma Soil, Frequently Flooded**

*Wild herbaceous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Poor  
*Wetland plants:* Good  
*Shallow water areas:* Fair

##### **Paranat Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair  
*Wetland plants:* Good  
*Shallow water areas:* Good

##### **Sonoma Soil, Occasionally Flooded**

*Wild herbaceous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Poor  
*Wetland plants:* Fair  
*Shallow water areas:* Fair

#### **Suitability and Limitations for Selected Uses**

##### **Sonoma Soil, Frequently Flooded**

*Range seeding:* Poor—excess salt  
*Roadfill:* Poor—low strength  
*Topsoil:* Fair—excess salt  
*Daily cover for landfill:* Fair—too clayey, wetness  
*Shallow excavations:* Severe—wetness  
*Local roads and streets:* Severe—low strength, frost action, flooding  
*Pond reservoir areas:* Slight  
*Embankments, dikes, and levees:* Severe—wetness  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

##### **Paranat Soil**

*Range seeding:* Fair—excess salts  
*Roadfill:* Poor—low strength  
*Topsoil:* Good  
*Daily cover for landfill:* Fair—too clayey, wetness  
*Shallow excavations:* Severe—wetness  
*Local roads and streets:* Severe—low strength, frost action, flooding  
*Pond reservoir areas:* Slight  
*Embankments, dikes, and levees:* Severe—piping, wetness  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

##### **Sonoma Soil, Occasionally Flooded**

*Range seeding:* Poor—excess salt  
*Roadfill:* Poor—low strength

*Topsoil:* Fair—excess salt

*Daily cover for landfill:* Fair—too clayey

*Shallow excavations:* Moderate—wetness, flooding

*Local roads and streets:* Severe—low strength, frost action, flooding

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Moderate—wetness, piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Restrictive Features for Selected Practices**

#### **Sonoma Soil, Frequently Flooded**

*Drainage:* Frost action, flooding

*Irrigation:* Wetness, erodes easily

*Terraces and diversions:* Wetness, erodes easily

#### **Paranat Soil**

*Drainage:* Flooding, frost action

*Irrigation:* Wetness, erodes easily, flooding

*Terraces and diversions:* Erodes easily, wetness

#### **Sonoma Soil, Occasionally Flooded**

*Drainage:* Deep to water

*Irrigation:* Erodes easily, flooding, excess salt

*Terraces and diversions:* Erodes easily

### **Interpretive Groups**

*Land capability classification:* Sonoma, frequently flooded; Paranat; and Sonoma, occasionally flooded, soils—IIIw, irrigated, and VIw, nonirrigated

*Range site:* Sonoma, frequently flooded, and Paranat soils—025X001N; Sonoma soil, occasionally flooded—024X006N; Inclusion 1—024X007N; Inclusion 2—028B003N; Inclusion 3—024X007N; Inclusion 4—024X015N

### **999—Sonoma-Wendane-Paranat association**

*Positions on landscape:* Stream flood plains, alluvial flats

### **Composition**

*Major components:*

Sonoma silt loam, drained, occasionally flooded, 0 to 2 percent slopes—45 percent

Wendane silt loam, frequently flooded, 0 to 2 percent slopes—25 percent

Paranat silt loam, 0 to 2 percent slopes—15 percent

*Contrasting inclusions:*

Fluvaquentic Haplaquolls, fine-loamy, mixed (calcareous), mesic, 0 to 2 percent slopes—8 percent

Xeric Torriorthents, coarse-silty, mixed (calcareous), mesic, 0 to 4 percent slopes—5 percent

Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—2 percent

### **Characteristics of the Sonoma Soil**

*Classification:* Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Outer margins of flood plains

*Parent material:* Mixed silty alluvium that includes volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 5,500 to 6,000 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 50 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Basin wildrye, basin big sagebrush, black greasewood

### **Typical Profile**

*Depth:* 0 to 12 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

*Depth:* 12 to 60 inches

*Texture:* Silt loam, silty clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

### **Soil and Water Features**

*Depth to a seasonal high water table:* 42 to 60 inches

*Frequency of flooding:* Occasional for brief to long periods in March through June

*Permeability:* Moderately slow

*Available water capacity:* 11 to 13 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Very slow

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—4L

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* High

### **Characteristics of the Wendane Soil**

*Classification:* Aeric Halaquepts, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Alluvial flats

*Parent material:* Silty alluvium derived from volcanic rock, tuff, loess, and volcanic ash



*Slope:* 0 to 2 percent  
*Elevation:* 5,500 to 6,000 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Black greasewood, basin wildrye

#### **Typical Profile**

*Depth:* 0 to 7 inches  
*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 30 to 50 millimhos per centimeter  
*Sodicity (SAR):* 13 to 25  
*Depth:* 7 to 18 inches  
*Texture:* Silt loam, very fine sandy loam  
*Structure:* Subangular blocky  
*Consistence:* Soft, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 16 to 30 millimhos per centimeter  
*Sodicity (SAR):* 46 to 60  
*Depth:* 18 to 60 inches  
*Texture:* Stratified silt loam to clay loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 16 to 30 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46

#### **Soil and Water Features**

*Depth to a seasonal high water table:* 30 to 48 inches  
*Frequency of flooding:* Frequent for brief to long periods in February through June  
*Permeability:* Moderately slow  
*Available water capacity:* 11 to 13 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Very slow  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—4L  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* High

#### **Characteristics of the Paranat Soil**

*Classification:* Fluvaquent Haplaquolls, fine-silty, mixed (calcareous), mesic  
*Positions on landscape:* Active flood plains near channels  
*Parent material:* Silty fluvial deposits  
*Slope:* 0 to 2 percent

*Elevation:* 5,500 to 6,000 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Rush, sedge, creeping wildrye, basin wildrye, bluegrass, willow

#### **Typical Profile**

*Depth:* 0 to 20 inches  
*Texture:* Silt loam  
*Structure:* Granular  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5  
*Depth:* 20 to 48 inches  
*Texture:* Silt loam, silty clay loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 48 to 60 inches  
*Texture:* Stratified very fine sandy loam to silty clay  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

#### **Soil and Water Features**

*Depth to a seasonal high water table:* 18 to 42 inches  
*Frequency of flooding:* Frequent for brief to long periods in December through June  
*Permeability:* Moderately slow  
*Available water capacity:* 11 to 13 inches  
*Water-supplying capacity:* 12 inches  
*Runoff:* Slow  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—4L  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* High

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Fluvaquent Haplaquolls, fine-loamy, mixed (calcareous), mesic  
*Positions on landscape:* Inactive, partially backfilled channels  
*Distinctive present vegetation:* Rush, sedge, inland saltgrass, basin wildrye

**Inclusion 2**

*Classification:* Xeric Torriorthents, coarse-silty, mixed (calcareous), mesic

*Positions on landscape:* Fanlettes adjacent to fan piedmont remnants

*Distinctive present vegetation:* Basin big sagebrush, rubber rabbitbrush, basin wildrye

**Inclusion 3**

*Classification:* Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Stream terraces

*Distinctive present vegetation:* Black greasewood

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Sonoma Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

*Wetland plants:* Fair

*Shallow water areas:* Fair

**Wendane Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

*Wetland plants:* Poor

*Shallow water areas:* Fair

**Paranat Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

*Wetland plants:* Good

*Shallow water areas:* Good

**Suitability and Limitations for Selected Uses****Sonoma Soil**

*Range seeding:* Poor—excess salt

*Roadfill:* Poor—low strength

*Topsoil:* Fair—excess salt

*Daily cover for landfill:* Fair—too clayey

*Shallow excavations:* Moderate—wetness, flooding

*Local roads and streets:* Severe—low strength, frost action, flooding

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Moderate—wetness, piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Wendane Soil**

*Range seeding:* Poor—excess salt, excess sodium

*Roadfill:* Poor—low strength

*Topsoil:* Poor—low strength

*Daily cover for landfill:* Poor—excess salt, excess sodium

*Shallow excavations:* Moderate—wetness, flooding

*Local roads and streets:* Severe—flooding, frost action

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Paranat Soil**

*Range seeding:* Fair—excess salt

*Roadfill:* Poor—low strength

*Topsoil:* Good

*Daily cover for landfill:* Fair—too clayey, wetness

*Shallow excavations:* Severe—wetness

*Local roads and streets:* Severe—low strength, frost action, flooding

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—piping, wetness

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Restrictive Features for Selected Practices****Sonoma Soil**

*Drainage:* Frost action, flooding

*Irrigation:* Erodes easily

*Terraces and diversions:* Erodes easily

**Paranat Soil**

*Drainage:* Flooding, frost action

*Irrigation:* Wetness, erodes easily, flooding

*Terraces and diversions:* Erodes easily, wetness

**Interpretive Groups**

*Land capability classification:* Sonoma soil—IIIw, irrigated, and VIw, nonirrigated; Wendane soil—VIIw, nonirrigated; Paranat soil—IIIw, irrigated, and VIw, nonirrigated

*Range site:* Sonoma soil—024X006N; Wendane soil—024X007N; Paranat soil—025X001N; Inclusion 1—025X001N; Inclusion 2—028B003N; Inclusion 3—024X011N

**1011—Stampede-Handy-Caniwe association**

*Positions on landscape:* Fan piedmonts, mountain valley fans

**Composition**

*Major components:*

Stampede gravelly loam, 4 to 8 percent slopes—50 percent

Handy gravelly loam, 8 to 15 percent slopes—30 percent  
 Caniwe very fine sandy loam, 2 to 4 percent slopes—10 percent  
*Contrasting inclusions:*  
 Buffaran gravelly loam, 4 to 15 percent slopes—7 percent  
 Pachic Haploxerolls, fine-loamy, mixed, frigid, 0 to 2 percent slopes—3 percent

### **Characteristics of the Stampede Soil**

*Classification:* Aridic Durixerolls, fine, montmorillonitic, frigid  
*Positions on landscape:* Summits of fan piedmont remnants and mountain valley fan remnants  
*Parent material:* Alluvium and colluvium derived from various kinds of rock  
*Slope:* 4 to 8 percent  
*Elevation:* 5,500 to 7,100 feet  
*Average annual precipitation:* About 11 inches  
*Average annual air temperature:* About 43 degrees F  
*Frost-free season:* About 100 days  
*Dominant present vegetation:* Bluebunch wheatgrass, needlegrass, mountain big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 40 percent pebbles

*Depth:* 0 to 10 inches  
*Texture:* Gravelly loam  
*Structure:* Platy  
*Consistence:* Soft, friable  
*Reaction:* Neutral

*Depth:* 10 to 31 inches  
*Texture:* Clay  
*Structure:* Prismatic  
*Consistence:* Very hard, very firm  
*Reaction:* Neutral

*Depth:* 31 to 60 inches  
*Material:* Indurated hardpan

### **Soil and Water Features**

*Depth to the hardpan:* 20 to 36 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Very slow  
*Available water capacity:* 3.4 to 5.3 inches  
*Water-supplying capacity:* 11 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.43; T value—2; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* High

*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Moderate

### **Characteristics of the Handy Soil**

*Classification:* Xerollic Haplargids, fine, montmorillonitic, frigid  
*Positions on landscape:* Side slopes of fan piedmont remnants and mountain valley fan remnants  
*Parent material:* Mixed alluvium  
*Slope:* 8 to 15 percent  
*Elevation:* 5,500 to 7,100 feet  
*Average annual precipitation:* About 11 inches  
*Average annual air temperature:* About 44 degrees F  
*Frost-free season:* About 100 days  
*Dominant present vegetation:* Indian ricegrass, needlegrass, western wheatgrass, big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 4 inches  
*Texture:* Gravelly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline

*Depth:* 4 to 30 inches  
*Texture:* Clay, gravelly clay  
*Structure:* Prismatic  
*Consistence:* Very hard, very firm  
*Reaction:* Moderately alkaline

*Depth:* 30 to 60 inches  
*Texture:* Stratified gravelly loam to very gravelly loamy sand

*Structure:* Massive  
*Consistence:* Hard, firm  
*Reaction:* Moderately alkaline

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 5.7 to 7.4 inches  
*Water-supplying capacity:* 11 inches  
*Runoff:* Medium  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.20; T value—5; wind erodibility group—7  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* High  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

### **Characteristics of the Caniwe Soil**

*Classification:* Aridic Duric Haploxerolls, fine-silty, mixed, mesic

*Positions on landscape:* Inset fans  
*Parent material:* Loess, mixed alluvium  
*Slope:* 2 to 4 percent  
*Elevation:* 5,800 to 6,800 feet  
*Average annual precipitation:* About 11 inches  
*Average annual air temperature:* About 45 degrees F  
*Frost-free season:* About 100 days  
*Dominant present vegetation:* Bluebunch wheatgrass, needlegrass, bluegrass, Wyoming big sagebrush

#### **Typical Profile**

*Depth:* 0 to 17 inches  
*Texture:* Very fine sandy loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Neutral

*Depth:* 17 to 60 inches  
*Texture:* Stratified silt loam to silty clay loam  
*Structure:* Subangular blocky  
*Consistence:* Hard, very friable  
*Reaction:* Mildly alkaline

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 10 to 12 inches  
*Water-supplying capacity:* 11 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.49; T value—5; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Xerollic Durargids, clayey, montmorillonitic, mesic, shallow  
*Positions on landscape:* The lower parts of summits and shoulder slopes of fan remnants  
*Distinctive present vegetation:* Indian ricegrass, bluegrass, Wyoming big sagebrush

##### **Inclusion 2**

*Classification:* Pachic Haploxerolls, fine-loamy, mixed, frigid  
*Positions on landscape:* Along stream and channel banks  
*Distinctive present vegetation:* Basin big sagebrush, basin wildrye, bluegrass

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Stampede Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

##### **Handy Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

##### **Caniwe Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

##### **Stampede Soil**

*Range seeding:* Fair—droughty  
*Roadfill:* Poor—cemented pan, shrink-swell, low strength  
*Topsoil:* Poor—too clayey, small stones  
*Daily cover for landfill:* Poor—cemented pan, hard to pack  
*Shallow excavations:* Severe—cemented pan  
*Local roads and streets:* Severe—shrink-swell, low strength  
*Pond reservoir areas:* Moderate—cemented pan, slope  
*Embankments, dikes, and levees:* Moderate—thin layer, hard to pack  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

##### **Handy Soil**

*Range seeding:* Poor—rooting depth  
*Roadfill:* Good  
*Topsoil:* Poor—small stones, area reclaim  
*Daily cover for landfill:* Poor—small stones  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Severe—low strength, shrink-swell  
*Pond reservoir areas:* Severe—seepage, slope  
*Embankments, dikes, and levees:* Severe—seepage  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

##### **Caniwe Soil**

*Range seeding:* Good  
*Roadfill:* Poor—low strength  
*Topsoil:* Fair—too clayey  
*Daily cover for landfill:* Fair—too clayey  
*Shallow excavations:* Slight  
*Local roads and streets:* Severe—low strength  
*Pond reservoir areas:* Moderate—slope  
*Embankments, dikes, and levees:* Severe—piping  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

### ***Interpretive Groups***

*Land capability classification:* Stampede soil—Ive, irrigated, and Vlc, nonirrigated; Handy soil—VIIIs, nonirrigated; Caniwe soil—Ile, irrigated, and Vlc, nonirrigated

*Range site:* Stampede soil—025X014N; Handy and Caniwe soils—028B007N; Inclusion 1—028B010N; Inclusion 2—028B003N

### **1041—Tenabo-Orovada-Buffaran association**

*Positions on landscape:* Fan piedmonts

#### ***Composition***

*Major components:*

Tenabo gravelly very fine sandy loam, 4 to 8 percent slopes—50 percent

Orovada fine sandy loam, 2 to 4 percent slopes—20 percent

Buffaran gravelly loam, 4 to 8 percent slopes—15 percent

*Contrasting inclusions:*

Typic Torriorthents, fine-loamy, mixed, mesic, 8 to 30 percent slopes—8 percent

Broyles fine sandy loam, 2 to 4 percent slopes—4 percent

Typic Torriorthents, fine-loamy, mixed, mesic, 8 to 15 percent slopes—3 percent

#### ***Characteristics of the Tenabo Soil***

*Classification:* Typic Nadurargids, loamy, mixed, mesic, shallow

*Positions on landscape:* The lower summits of fan piedmont remnants

*Parent material:* Thin loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 4 to 8 percent

*Elevation:* 5,600 to 6,000 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass

#### ***Typical Profile***

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Gravelly very fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 4 to 15 inches

*Texture:* Clay loam, gravelly clay loam, silty clay loam

*Structure:* Prismatic

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

*Depth:* 15 to 28 inches

*Material:* Indurated hardpan

*Structure:* Platy

*Consistence:* Extremely hard, extremely firm

*Depth:* 28 to 60 inches

*Texture:* Stratified very gravelly sandy loam to extremely gravelly coarse sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

#### ***Soil and Water Features***

*Depth to the hardpan:* 9 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 2.5 to 2.9 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—moderate

*Potential for frost action:* Low

#### ***Characteristics of the Orovada Soil***

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Inset fans

*Parent material:* Loess that is high in content of volcanic ash over mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 5,600 to 6,000 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

#### ***Typical Profile***

*Depth:* 0 to 8 inches

*Texture:* Fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 8 to 26 inches

*Texture:* Fine sandy loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 26 to 61 inches

*Texture:* Stratified fine sandy loam to silt loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 9 to 11 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Buffaran Soil**

*Classification:* Xerollic Durargids, clayey, montmorillonitic, mesic, shallow

*Positions on landscape:* The higher summits of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 4 to 8 percent

*Elevation:* 5,600 to 6,000 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Thurber needlegrass, bottlebrush squirreltail, Indian ricegrass, big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 15 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 5 to 16 inches

*Texture:* Clay, gravelly clay, gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 16 to 27 inches

*Material:* Indurated hardpan

*Structure:* Massive

*Consistence:* Extremely hard, extremely firm

*Depth:* 27 to 60 inches

*Material:* Cemented hardpan

*Structure:* Platy

*Consistence:* Very hard, very firm

#### **Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.9 to 2.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.32; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Typic Torriorthents, fine-loamy, mixed, mesic

*Positions on landscape:* Side slopes of fan piedmont remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush

##### **Inclusion 2**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* The lower inset fans near scarp breaks

*Distinctive present vegetation:* Shadscale, bud sagebrush

**Inclusion 3**

*Classification:* Typic Torriorthents, fine-loamy, mixed, mesic

*Positions on landscape:* Fan toe slopes, scarp breaks

*Distinctive present vegetation:* Big sagebrush, black greasewood

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Tenabo Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

**Orovada Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Buffaran Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses****Tenabo Soil**

*Range seeding:* Poor—droughty, excess sodium

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—cemented pan, small stones, too sandy

*Daily cover for landfill:* Poor—cemented pan, seepage, too sandy

*Shallow excavations:* Severe—cemented pan, cutbanks cave

*Local roads and streets:* Severe—cemented pan

*Pond reservoir areas:* Severe—seepage, cemented pan

*Embankments, dikes, and levees:* Severe—seepage, excess sodium, excess salt

*Sand:* Probable source

*Gravel:* Probable source

**Orovada Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Fair—small stones, thin layer

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Buffaran Soil**

*Range seeding:* Poor—droughty, rooting depth

*Roadfill:* Poor—cemented pan, shrink-swell, low strength

*Topsoil:* Poor—cemented pan, too clayey, small stones

*Daily cover for landfill:* Poor—cemented pan, hard to pack

*Shallow excavations:* Severe—cemented pan

*Local roads and streets:* Severe—cemented pan, shrink-swell, low strength

*Pond reservoir areas:* Severe—cemented pan

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Tenabo soil—Ive, irrigated, and VIIs, nonirrigated; Orovada soil—Ile, irrigated, and Vlc, nonirrigated; Buffaran soil—VIIs, nonirrigated

*Range site:* Tenabo soil—024X002N; Orovada and Buffaran soils—028B010N; Inclusions 1 and 2—024X002N; Inclusion 3—024X022N

**1042—Tenabo-Ricert-Desatoya association**

*Positions on landscape:* Fan piedmonts

**Composition**

*Major components:*

Tenabo gravelly very fine sandy loam, 4 to 8 percent slopes—45 percent

Ricert very gravelly very fine sandy loam, 2 to 4 percent slopes—25 percent

Desatoya gravelly fine sandy loam, 8 to 15 percent slopes—15 percent

*Contrasting inclusions:*

Xerollic Camborthids, loamy-skeletal, mixed, mesic, 2 to 4 percent slopes—7 percent

Haploxerollic Durargids, loamy, mixed, mesic, shallow, 4 to 8 percent slopes—4 percent

Allor gravelly loam, 2 to 4 percent slopes—4 percent

**Characteristics of the Tenabo Soil**

*Classification:* Typic Nadurargids, loamy, mixed, mesic, shallow

*Positions on landscape:* The higher summits and shoulder slopes of fan piedmont remnants

*Parent material:* Thin loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 4 to 8 percent

*Elevation:* 6,200 to 6,500 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass

**Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Gravelly very fine sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5  
*Depth:* 4 to 15 inches  
*Texture:* Clay loam, gravelly clay loam, silty clay loam  
*Structure:* Prismatic  
*Consistence:* Hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46  
*Depth:* 15 to 28 inches  
*Material:* Indurated hardpan  
*Structure:* Platy  
*Consistence:* Extremely hard, extremely firm  
*Depth:* 28 to 60  
*Texture:* Stratified very gravelly sandy loam to extremely gravelly coarse sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 46 to 60

#### **Soil and Water Features**

*Depth to the hardpan:* 9 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 2.5 to 2.9 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—4  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—moderate  
*Potential for frost action:* Low

#### **Characteristics of the Ricert Soil**

*Classification:* Duric Natrargids, fine-loamy, mixed, mesic  
*Positions on landscape:* The lower summits and shoulder slopes of fan piedmont remnants  
*Parent material:* Thin loess deposits over mixed alluvium  
*Slope:* 2 to 4 percent  
*Elevation:* 6,200 to 6,500 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 120 days  
*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bluegrass

#### **Typical Profile**

*Depth:* 0 to 6 inches  
*Texture:* Very gravelly very fine sandy loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5  
*Depth:* 6 to 18 inches  
*Texture:* Loam, clay loam  
*Structure:* Prismatic  
*Consistence:* Hard, firm  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 8 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46  
*Depth:* 18 to 60 inches  
*Texture:* Very gravelly sandy loam  
*Structure:* Massive  
*Consistence:* Soft, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 8 millimhos per centimeter  
*Sodicity (SAR):* 46 to 60

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 4 to 6 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Medium  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.10; T value—5; wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* Low

#### **Characteristics of the Desatoya Soil**

*Classification:* Durixerollic Haplargids, clayey over loamy-skeletal, montmorillonitic, mesic  
*Positions on landscape:* North-facing side slopes of fan piedmont remnants  
*Parent material:* Mixed alluvium  
*Slope:* 8 to 15 percent  
*Elevation:* 6,200 to 6,500 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days



*Dominant present vegetation:* Bluegrass, needlegrass,  
Indian ricegrass, black sagebrush

### **Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 13 inches

*Texture:* Gravelly clay, gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 13 to 60 inches

*Texture:* Stratified extremely gravelly sandy loam to very  
gravelly loamy sand

*Structure:* Massive

*Consistence:* Hard, firm

*Reaction:* Strongly alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60  
inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 3.0 to 5.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.20; T value—5;  
wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Xerollic Camborthids, loamy-skeletal,  
mixed, mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Bluegrass, Wyoming big  
sagebrush

#### **Inclusion 2**

*Classification:* Haploxerollic Durargids, loamy, mixed,  
mesic, shallow

*Positions on landscape:* Summits on the upper part of  
fan piedmont remnants

*Distinctive present vegetation:* Wyoming big sagebrush,  
spiny hopsage

### **Inclusion 3**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed,  
mesic

*Positions on landscape:* Adjacent fan aprons

*Distinctive present vegetation:* Wyoming big sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Tenabo Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Ricert Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Desatoya Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Tenabo Soil**

*Range seeding:* Poor—droughty, excess sodium

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—cemented pan, small stones, too sandy

*Daily cover for landfill:* Poor—cemented pan, seepage,  
too sandy

*Shallow excavations:* Severe—cemented pan, cutbanks  
cave

*Local roads and streets:* Severe—cemented pan

*Pond reservoir areas:* Severe—seepage, cemented pan

*Embankments, dikes, and levees:* Severe—seepage,  
excess sodium, excess salt

*Sand:* Probable source

*Gravel:* Probable source

#### **Ricert Soil**

*Range seeding:* Poor—excess salt, excess sodium

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim, excess  
sodium

*Daily cover for landfill:* Poor—seepage, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage,  
excess sodium

*Sand:* Probable source

*Gravel:* Probable source

**Desatoya Soil**

*Range seeding:* Poor—rooting depth  
*Roadfill:* Fair—large stones  
*Topsoil:* Poor—small stones, area reclaim  
*Daily cover for landfill:* Poor—small stones  
*Shallow excavations:* Moderate—large stones, slope  
*Local roads and streets:* Moderate—slope, frost action, large stones  
*Pond reservoir areas:* Severe—slope  
*Embankments, dikes, and levees:* Severe—seepage  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Tenabo soil—IVe, irrigated, and VIIs, nonirrigated; Ricert soil—IVs, irrigated, and VIIs, nonirrigated; Desatoya soil—VIIs, nonirrigated  
*Range site:* Tenabo and Ricert soils—024X002N; Desatoya soil—024X030N; Inclusion 1—024X005N; Inclusion 2—024X020N; Inclusion 3—024X005N

**1092—Tulase-Bubus-McConnel association**

*Positions on landscape:* Basin floors, fan skirts

**Composition**

*Major components:*  
 Tulase silt loam, 2 to 8 percent slopes—40 percent  
 Bubus very fine sandy loam, slightly saline, 2 to 4 percent slopes—30 percent  
 McConnel loam, 0 to 4 percent slopes—15 percent  
*Contrasting inclusions:*  
 Duric Camborthids, coarse-silty, mixed, mesic, 0 to 2 percent slopes—5 percent  
 Xeric Torriorthents, coarse-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—5 percent  
 Xerollic Camborthids, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—5 percent

**Characteristics of the Tulase Soil**

*Classification:* Durorthidic Xeric Torriorthents, coarse-silty, mixed (calcareous), mesic  
*Positions on landscape:* The higher fan skirts and lagoons  
*Parent material:* Mixed silty alluvium that includes loess and volcanic ash  
*Slope:* 2 to 8 percent  
*Elevation:* 5,600 to 5,800 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bottlebrush squirreltail, Indian ricegrass, bluegrass, Wyoming big sagebrush

**Typical Profile**

*Depth:* 0 to 6 inches  
*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 6 to 60 inches  
*Texture:* Very fine sandy loam, silt loam  
*Structure:* Massive  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 9 to 12 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Medium  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—4L  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

**Characteristics of the Bubus Soil**

*Classification:* Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic  
*Positions on landscape:* Alluvial flats  
*Parent material:* Mixed alluvium that is high in content of pyroclastic material  
*Slope:* 2 to 4 percent  
*Elevation:* 5,600 to 5,800 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

**Typical Profile**

*Depth:* 0 to 6 inches  
*Texture:* Very fine sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 5 to 13

*Depth:* 6 to 60 inches  
*Texture:* Stratified sandy loam to silt loam  
*Structure:* Massive  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 16 to 25 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 9 to 10 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.49; T value—5; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* Low

#### **Characteristics of the McConnel Soil**

*Classification:* Xerollic Camborthids, sandy-skeletal, mixed, mesic  
*Positions on landscape:* Offshore bars  
*Parent material:* Alluvium that includes some loess and ash over lacustrine sediment  
*Slope:* 0 to 4 percent  
*Elevation:* 5,600 to 5,800 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 50 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bottlebrush squirreltail, bluegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 20 percent pebbles  
*Depth:* 0 to 6 inches  
*Texture:* Loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 6 to 12 inches  
*Texture:* Fine sandy loam, loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 12 to 60 inches  
*Texture:* Stratified very gravelly sandy loam to extremely gravelly coarse sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately rapid over very rapid  
*Available water capacity:* 3.0 to 6.4 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.37; T value—2; wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—moderate  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—moderate  
*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Duric Camborthids, coarse-silty, mixed, mesic  
*Positions on landscape:* Inset fan remnants  
*Distinctive present vegetation:* Black greasewood, shadscale

##### **Inclusion 2**

*Classification:* Xeric Torriorthents, coarse-silty, mixed (calcareous), mesic  
*Positions on landscape:* Inset fans  
*Distinctive present vegetation:* Wyoming big sagebrush

##### **Inclusion 3**

*Classification:* Xerollic Camborthids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Offshore bars  
*Distinctive present vegetation:* Wyoming big sagebrush

#### **Major Uses**

*Current uses:* Livestock grazing, wildlife habitat  
*Potential foreseeable use:* Irrigated cropland

#### **Suitability for Wildlife Habitat Elements**

##### **Tulase Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

##### **Bubus Soil**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor

**McConnel Soil***Wild herbaceous plants (nonirrigated):* Fair*Shrubs (nonirrigated):* Fair***Suitability and Limitations for Selected Uses*****Tulase Soil***Range seeding:* Fair—too arid*Roadfill:* Good*Topsoil:* Good*Daily cover for landfill:* Good*Shallow excavations:* Slight*Local roads and streets:* Moderate—frost action*Pond reservoir areas:* Moderate—seepage, slope*Embankments, dikes, and levees:* Severe—piping*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines**Bubus Soil***Range seeding:* Poor—excess salt, excess sodium*Roadfill:* Good*Topsoil:* Poor—excess salt*Daily cover for landfill:* Good*Shallow excavations:* Slight*Local roads and streets:* Slight*Pond reservoir areas:* Moderate—seepage, slope*Embankments, dikes, and levees:* Severe—piping, excess salt*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines**McConnel Soil***Range seeding:* Fair—too arid, droughty*Roadfill:* Good*Topsoil:* Poor—too sandy, small stones, area reclaim*Daily cover for landfill:* Poor—seepage, too sandy, small stones*Shallow excavations:* Severe—cutbanks cave*Local roads and streets:* Slight*Pond reservoir areas:* Severe—seepage*Embankments, dikes, and levees:* Severe—seepage, excess salt*Sand:* Probable source*Gravel:* Probable source***Restrictive Features for Selected Practices*****Tulase Soil***Drainage:* Deep to water*Irrigation:* Erodes easily, slope*Terraces and diversions:* Erodes easily**Bubus Soil***Drainage:* Deep to water*Irrigation:* Slope, erodes easily, excess salt*Terraces and diversions:* Erodes easily**McConnel Soil***Drainage:* Deep to water*Irrigation:* Droughty*Terraces and diversions:* Erodes easily, too sandy***Interpretive Groups****Land capability classification:* Tulase soil—IIIe, irrigated, and VIc, nonirrigated; Bubus soil—IIc, irrigated, and VIIc, nonirrigated; McConnel soil—IVe, irrigated, and VIIs, nonirrigated*Range site:* Tulase and McConnel soils—024X005N; Bubus soil—024X002N; Inclusion 1—024X003N; Inclusions 2 and 3—024X005N**1131—Fortank gravelly loam, 4 to 8 percent slopes***Positions on landscape:* Foothills***Composition****Major component:*

Fortank gravelly loam, 4 to 8 percent slopes, extremely stony—85 percent

*Contrasting inclusions:*

Abruptic Xerollic Durargids, fine, montmorillonitic, mesic, 4 to 15 percent slopes—8 percent

Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic, 2 to 8 percent slopes—5 percent

Haploxerollic Durorthids, fine-loamy, mixed, mesic, 4 to 8 percent slopes—2 percent

***Characteristics of the Fortank Soil****Classification:* Xerollic Haplargids, fine, montmorillonitic, frigid*Positions on landscape:* Side slopes of foothills*Parent material:* Residuum derived from rhyolite, andesite, and quartzite*Slope:* 4 to 8 percent*Elevation:* 6,200 to 6,800 feet*Average annual precipitation:* About 9 inches*Average annual air temperature:* About 44 degrees F*Frost-free season:* About 100 days*Dominant present vegetation:* Bluegrass, Indian ricegrass, Wyoming big sagebrush***Typical Profile****Rock fragments on surface:* 10 percent stones and boulders, 15 percent cobbles, 40 percent pebbles*Depth:* 0 to 6 inches*Texture:* Gravelly loam*Structure:* Platy*Consistence:* Soft, very friable*Reaction:* Mildly alkaline*Depth:* 6 to 30 inches*Texture:* Gravelly clay, gravelly clay loam*Structure:* Angular blocky

*Consistence:* Hard, friable  
*Reaction:* Moderately alkaline

*Depth:* 30 inches  
*Texture:* Weathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 30 to 40 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 3 to 4 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Medium  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.15; T value—2; wind erodibility group—8  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* High  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Abruptic Xerollic Durargids, fine, montmorillonitic, mesic  
*Positions on landscape:* Concave fan piedmont remnants  
*Distinctive present vegetation:* Indian ricegrass, black sagebrush

##### **Inclusion 2**

*Classification:* Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic  
*Positions on landscape:* Inset fans between foothills  
*Distinctive present vegetation:* Indian ricegrass, Wyoming big sagebrush

##### **Inclusion 3**

*Classification:* Haploxerollic Durorthids, fine-loamy, mixed, mesic  
*Positions on landscape:* Convex fan piedmont remnants  
*Distinctive present vegetation:* Indian ricegrass, Wyoming big sagebrush

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

*Range seeding:* Poor—rooting depth  
*Roadfill:* Poor—depth to rock, low strength, shrink-swell  
*Topsoil:* Poor—small stones

*Daily cover for landfill:* Poor—depth to rock, small stones  
*Shallow excavations:* Moderate—depth to rock, too clayey  
*Local roads and streets:* Severe—low strength, shrink-swell  
*Pond reservoir areas:* Moderate—depth to rock, slope  
*Embankments, dikes, and levees:* Moderate—thin layer, large stones  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Fortank soil—VIIIs, nonirrigated  
*Range site:* Fortank soil—028B010N; Inclusion 1—028B011N; Inclusions 2 and 3—028B010N

### **1140—Wendane silt loam, frequently flooded**

*Positions on landscape:* Alluvial flats

#### **Composition**

*Major component:*  
 Wendane silt loam, frequently flooded, 0 to 2 percent slopes—85 percent  
*Contrasting inclusions:*  
 Aquic Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—5 percent  
 Wendane silt loam, occasionally flooded, 0 to 2 percent slopes—5 percent  
 Typic Torriorthents, fine-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—5 percent

#### **Characteristics of the Wendane Soil**

*Classification:* Aeris Halaquepts, fine-silty, mixed (calcareous), mesic  
*Positions on landscape:* Alluvial flats  
*Parent material:* Silty alluvium derived from volcanic rock, tuff, loess, and volcanic ash  
*Slope:* 0 to 2 percent  
*Elevation:* 5,200 to 6,000 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Black greasewood, basin wildrye

#### **Typical Profile**

*Depth:* 0 to 7 inches  
*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline  
*Salinity:* 30 to 50 millimhos per centimeter  
*Sodicity (SAR):* 13 to 25

*Depth:* 7 to 18 inches  
*Texture:* Silt loam, very fine sandy loam  
*Structure:* Subangular blocky  
*Consistence:* Soft, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 16 to 30 millimhos per centimeter  
*Sodicity (SAR):* 46 to 60

*Depth:* 18 to 60 inches  
*Texture:* Stratified silt loam to clay loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 16 to 30 millimhos per centimeter  
*Sodicity (SAR):* 25 to 35

#### **Soil and Water Features**

*Depth to a seasonal high water table:* 30 to 48 inches  
*Frequency of flooding:* Frequent for brief to long periods in February through June  
*Permeability:* Moderately slow  
*Available water capacity:* 11.0 to 12.6 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Very slow  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—4L  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* High

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Aquic Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic  
*Positions on landscape:* Alluvial flat remnants near fan skirts  
*Distinctive present vegetation:* Bottlebrush squirreltail, black greasewood, shadscale

##### **Inclusion 2**

*Classification:* Aeric Halaquepts, fine-silty, mixed (calcareous), mesic  
*Positions on landscape:* The higher parts of alluvial flats  
*Distinctive present vegetation:* Saltbush, black greasewood, inland saltgrass

##### **Inclusion 3**

*Classification:* Typic Torriorthents, fine-silty, mixed (calcareous), mesic  
*Positions on landscape:* Alluvial flat remnants

*Distinctive present vegetation:* Basin wildrye, basin big sagebrush, black greasewood

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor  
*Wetland plants:* Fair  
*Shallow water areas:* Poor

#### **Suitability and Limitations for Selected Uses**

*Range seeding:* Poor—excess salt, excess sodium  
*Roadfill:* Poor—low strength  
*Topsoil:* Poor—excess salt, excess sodium  
*Daily cover for landfill:* Poor—excess salt, excess sodium  
*Shallow excavations:* Moderate—wetness, flooding  
*Local roads and streets:* Severe—flooding, frost action  
*Pond reservoir areas:* Moderate—seepage  
*Embankments, dikes, and levees:* Severe—excess salt, excess sodium  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Wendane soil—VIIw, nonirrigated  
*Range site:* Wendane soil—024X007N; Inclusion 1—024X003N; Inclusion 2—024X011N; Inclusion 3—024X006N

### **1141—Wendane-Umberland association**

*Positions on landscape:* Alluvial flats, lake plains

#### **Composition**

##### *Major components:*

Wendane silt loam, strongly sodic, 0 to 2 percent slopes—45 percent  
Wendane silt loam, frequently flooded, 0 to 2 percent slopes—25 percent  
Umberland silt loam, rarely flooded, 0 to 2 percent slopes—20 percent  
*Contrasting inclusions:*  
Aquic Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—5 percent  
Wendane silt loam, occasionally flooded, 0 to 2 percent slopes—4 percent  
Playas—1 percent

### ***Characteristics of the Wendane Soil, Strongly Sodic***

**Classification:** Aeric Halaquepts, fine-silty, mixed (calcareous), mesic  
**Positions on landscape:** Convex alluvial flats  
**Parent material:** Silty alluvium derived from volcanic rock, tuff, loess, and volcanic ash  
**Slope:** 0 to 2 percent  
**Elevation:** 5,500 to 5,700 feet  
**Average annual precipitation:** About 7 inches  
**Average annual air temperature:** About 49 degrees F  
**Frost-free season:** About 120 days  
**Dominant present vegetation:** Basin wildrye, silver buffaloberry, black greasewood

#### **Typical Profile**

**Depth:** 0 to 7 inches  
**Texture:** Silt loam  
**Structure:** Platy  
**Consistence:** Slightly hard, very friable  
**Reaction:** Very strongly alkaline  
**Salinity:** 30 to 60 millimhos per centimeter  
**Sodicity (SAR):** 60 to 80

**Depth:** 7 to 18 inches  
**Texture:** Silt loam, very fine sandy loam  
**Structure:** Subangular blocky  
**Consistence:** Soft, very friable  
**Reaction:** Strongly alkaline  
**Salinity:** 16 to 40 millimhos per centimeter  
**Sodicity (SAR):** 46 to 60

**Depth:** 18 to 60 inches  
**Texture:** Stratified silt loam to clay loam  
**Structure:** Massive  
**Consistence:** Slightly hard, friable  
**Reaction:** Strongly alkaline  
**Salinity:** 16 to 30 millimhos per centimeter  
**Sodicity (SAR):** 25 to 35

#### **Soil and Water Features**

**Depth to a seasonal high water table:** 30 to 48 inches  
**Frequency of flooding:** Occasional for brief to long periods in February through June  
**Permeability:** Moderately slow  
**Available water capacity:** 11 to 13 inches  
**Water-supplying capacity:** 7 inches  
**Runoff:** Very slow  
**Hydrologic group:** C  
**Erosion factors (upper layer):** K value—0.55; T value—5; wind erodibility group—4L  
**Hazard of erosion:** By water—slight; by wind—severe  
**Shrink-swell potential:** Moderate  
**Corrosivity:** To steel—high; to concrete—high  
**Potential for frost action:** High

### ***Characteristics of the Wendane Soil, Frequently Flooded***

**Classification:** Aeric Halaquepts, fine-silty, mixed (calcareous), mesic  
**Positions on landscape:** Concave alluvial flats  
**Parent material:** Silty alluvium derived from volcanic rock, tuff, loess, and volcanic ash  
**Slope:** 0 to 2 percent  
**Elevation:** 5,500 to 5,700 feet  
**Average annual precipitation:** About 7 inches  
**Average annual air temperature:** About 49 degrees F  
**Frost-free season:** About 120 days  
**Dominant present vegetation:** Black greasewood, basin wildrye

#### **Typical Profile**

**Depth:** 0 to 7 inches  
**Texture:** Silt loam  
**Structure:** Platy  
**Consistence:** Slightly hard, very friable  
**Reaction:** Strongly alkaline  
**Salinity:** 30 to 50 millimhos per centimeter  
**Sodicity (SAR):** 13 to 25

**Depth:** 7 to 18 inches  
**Texture:** Silt loam, very fine sandy loam  
**Structure:** Subangular blocky  
**Consistence:** Soft, very friable  
**Reaction:** Strongly alkaline  
**Salinity:** 16 to 30 millimhos per centimeter  
**Sodicity (SAR):** 46 to 60

**Depth:** 18 to 60 inches  
**Texture:** Stratified silt loam to clay loam  
**Structure:** Massive  
**Consistence:** Slightly hard, friable  
**Reaction:** Strongly alkaline  
**Salinity:** 16 to 30 millimhos per centimeter  
**Sodicity (SAR):** 25 to 35

#### **Soil and Water Features**

**Depth to a seasonal high water table:** 30 to 48 inches  
**Frequency of flooding:** Frequent for brief to long periods in February through June  
**Permeability:** Moderately slow  
**Available water capacity:** 11 to 13 inches  
**Water-supplying capacity:** 7 inches  
**Runoff:** Very slow  
**Hydrologic group:** C  
**Erosion factors (upper layer):** K value—0.55; T value—5; wind erodibility group—4L  
**Hazard of erosion:** By water—slight; by wind—severe  
**Shrink-swell potential:** Moderate  
**Corrosivity:** To steel—high; to concrete—high  
**Potential for frost action:** High

### **Characteristics of the Umberland Soil**

*Classification:* Aerlic Halaquepts, fine, montmorillonitic (calcareous), mesic

*Positions on landscape:* Lake plain terrace remnants

*Parent material:* Silty lacustrine sediment derived from various kinds of rock

*Slope:* 0 to 2 percent

*Elevation:* 5,500 to 5,700 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 130 days

*Dominant present vegetation:* Iodinebush, rubber rabbitbrush, alkali sacaton, sickle saltbush

#### **Typical Profile**

*Depth:* 0 to 7 inches

*Texture:* Silt loam

*Structure:* Granular

*Consistence:* Slightly hard, friable

*Reaction:* Very strongly alkaline

*Salinity:* 25 to 40 millimhos per centimeter

*Sodicity (SAR):* 60 to 80

*Depth:* 7 to 60 inches

*Texture:* Clay, silty clay, silty clay loam

*Structure:* Angular blocky

*Consistence:* Hard, firm

*Reaction:* Very strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

#### **Soil and Water Features**

*Depth to a seasonal high water table:* 30 to 60 inches

*Frequency of flooding:* Rare

*Permeability:* Very slow

*Available water capacity:* 9 to 12 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Very slow

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—4L

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* High

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Aquic Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Narrow, linear inset fans and channels

*Distinctive present vegetation:* Basin wildrye, basin big sagebrush, black greasewood

#### **Inclusion 2**

*Classification:* Aerlic Halaquepts, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Alluvial flats adjacent to areas of Playas

*Distinctive present vegetation:* Black greasewood, inland saltgrass

#### **Inclusion 3**

*Positions on landscape:* Small, shallow depressions and sink areas

*Distinctive present vegetation:* None

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Wendane Soil, Strongly Sodic**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Wendane Soil, Frequently Flooded**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

*Wetland plants:* Fair

*Shallow water areas:* Poor

#### **Umberland Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

*Wetland plants:* Poor

*Shallow water areas:* Poor

### **Suitability and Limitations for Selected Uses**

#### **Wendane Soil, Strongly Sodic**

*Range seeding:* Poor—excess salt, excess sodium

*Roadfill:* Poor—low strength

*Topsoil:* Fair—wetness, shrink-swell

*Daily cover for landfill:* Poor—excess salt, excess sodium

*Shallow excavations:* Moderate—wetness, flooding

*Local roads and streets:* Severe—flooding, frost action

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Wendane Soil, Frequently Flooded**

*Range seeding:* Poor—excess salt, excess sodium

*Roadfill:* Poor—low strength

*Topsoil:* Poor—excess salt, excess sodium

*Daily cover for landfill:* Poor—excess salt, excess sodium

*Shallow excavations:* Moderate—wetness, flooding

*Local roads and streets:* Severe—flooding, frost action



*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Umbreland Soil**

*Range seeding:* Poor—excess salt, excess sodium, too crusty

*Roadfill:* Poor—low strength, shrink-swell

*Topsoil:* Poor—excess salt, excess sodium, too clayey

*Daily cover for landfill:* Poor—too clayey, hard to pack, excess salt

*Shallow excavations:* Moderate—too clayey, wetness

*Local roads and streets:* Severe—low strength, frost action, shrink-swell

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Restrictive Features for Selected Practices**

##### **Umbreland Soil**

*Drainage:* Percs slowly, frost action, excess salt

*Irrigation:* Wetness, percs slowly

*Terraces and diversions:* Erodes easily, wetness, percs slowly

#### **Interpretive Groups**

*Land capability classification:* Wendane and Umbreland soils—VIIw, nonirrigated

*Range site:* Wendane soil, strongly sodic—028B057N; Wendane soil, frequently flooded—024X007N; Umbreland soil—024X010N; Inclusion 1—024X006N; Inclusion 2—024X011N; Inclusion 3—none

### **1142—Wendane-Gund association**

*Positions on landscape:* Alluvial flats, lake plains

#### **Composition**

##### **Major components:**

Wendane silt loam, frequently flooded, 0 to 2 percent slopes—45 percent

Gund silt loam, 0 to 2 percent slopes—30 percent

Gund silt loam, drained, 0 to 2 percent slopes—15 percent

##### **Contrasting inclusions:**

Wendane silt loam, occasionally flooded, 0 to 2 percent slopes—6 percent

Umbreland silt loam, 0 to 2 percent slopes—4 percent

### **Characteristics of the Wendane Soil**

*Classification:* Aeric Halaquepts, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Alluvial flats

*Parent material:* Silty alluvium derived from volcanic rock, tuff, loess, and volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 5,600 to 5,800 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Black greasewood, basin wildrye

#### **Typical Profile**

*Depth:* 0 to 7 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 30 to 50 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

*Depth:* 7 to 18 inches

*Texture:* Silt loam, very fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

*Depth:* 18 to 60 inches

*Texture:* Stratified silt loam to clay loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 25 to 35

#### **Soil and Water Features**

*Depth to a seasonal high water table:* 30 to 48 inches

*Frequency of flooding:* Frequent for brief to long periods in February through June

*Permeability:* Moderately slow

*Available water capacity:* 11 to 13 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Very slow

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—4L

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* High

### **Characteristics of the Gund Soil**

*Classification:* Aquic Durorthidic Torriorthents, fine-silty over clayey, mixed, nonacid, mesic

*Positions on landscape:* Lake plain terraces

*Parent material:* Silty alluvium derived from loess and volcanic ash over lake sediment

*Slope:* 0 to 2 percent

*Elevation:* 5,600 to 5,800 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Basin wildrye, basin big sagebrush, black greasewood

#### **Typical Profile**

*Depth:* 0 to 4 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 10 to 25

*Depth:* 4 to 23 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Hard, firm

*Reaction:* Moderately alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

*Depth:* 23 to 60 inches

*Texture:* Silty clay, clay

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

#### **Soil and Water Features**

*Depth to a seasonal high water table:* 36 to 42 inches

*Frequency of flooding:* Rare

*Permeability:* Slow

*Available water capacity:* 9 to 11 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Very slow

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.49; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* High

### **Characteristics of the Gund Soil, Drained**

*Classification:* Aquic Durorthidic Torriorthents, fine-silty

over clayey, mixed, nonacid, mesic

*Positions on landscape:* Lake plain terrace remnants

*Parent material:* Silty alluvium derived from loess and volcanic ash over lake sediment

*Slope:* 0 to 2 percent

*Elevation:* 5,600 to 5,800 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Black greasewood, basin wildrye

#### **Typical Profile**

*Depth:* 0 to 4 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 75 to 10 millimhos per centimeter

*Sodicity (SAR):* 10 to 25

*Depth:* 4 to 23 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Hard, firm

*Reaction:* Moderately alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 50 to 80

*Depth:* 23 to 60 inches

*Texture:* Silty clay, clay

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

#### **Soil and Water Features**

*Depth to a seasonal high water table:* 60 to 72 inches

*Frequency of flooding:* Rare

*Permeability:* Slow

*Available water capacity:* 9 to 11 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Very slow

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.49; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* High

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Aeris Halaquepts, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Alluvial flat margins

*Distinctive present vegetation:* Black greasewood, inland saltgrass

## **Inclusion 2**

*Classification:* Aeris Halaquepts, fine, montmorillonitic (calcareous), mesic

*Positions on landscape:* The lower margins of lake plain terrace remnants

*Distinctive present vegetation:* Iodinebush, alkali sacaton

## **Major Current Uses**

Livestock grazing, wildlife habitat

## **Suitability for Wildlife Habitat Elements**

### **Wendane Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

### **Gund Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

*Wetland plants:* Very poor

*Shallow water areas:* Fair

### **Gund Soil, Drained**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

## **Suitability and Limitations for Selected Uses**

### **Wendane Soil**

*Range seeding:* Poor—excess salt, excess sodium

*Roadfill:* Poor—low strength

*Topsoil:* Poor—excess salt, excess sodium

*Daily cover for landfill:* Poor—excess salt, excess sodium

*Shallow excavations:* Moderate—wetness, flooding

*Local roads and streets:* Severe—flooding, frost action

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Gund Soil**

*Range seeding:* Poor—excess salt, excess sodium

*Roadfill:* Poor—low strength, shrink-swell

*Topsoil:* Poor—excess salt, excess sodium

*Daily cover for landfill:* Poor—too clayey, hard to pack, excess salt

*Shallow excavations:* Moderate—too clayey, wetness

*Local roads and streets:* Severe—low strength, frost action, shrink-swell

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Gund Soil, Drained**

*Range seeding:* Poor—excess salt, excess sodium

*Roadfill:* Poor—low strength, shrink-swell

*Topsoil:* Poor—excess salt, excess sodium

*Daily cover for landfill:* Poor—too clayey, hard to pack, excess sodium

*Shallow excavations:* Moderate—too clayey, wetness

*Local roads and streets:* Severe—low strength, frost action, shrink-swell

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

## **Interpretive Groups**

*Land capability classification:* Wendane and Gund soils—VIIw, nonirrigated

*Range site:* Wendane soil—024X007N; Gund soil—024X006N; Gund soil, drained—024X008N;

Inclusion 1—024X011N; Inclusion 2—024X010N

## **1143—Wendane silt loam, occasionally flooded**

*Positions on landscape:* Basin floors

## **Composition**

*Major component:*

Wendane silt loam, occasionally flooded, 0 to 2 percent slopes—85 percent

*Contrasting inclusions:*

Aquic Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—5 percent

Sonoma silt loam, frequently flooded, strongly saline, 0 to 2 percent slopes—5 percent

Aeric Halaquepts, fine, montmorillonitic, mesic, 0 to 2 percent slopes—5 percent

## **Characteristics of the Wendane Soil**

*Classification:* Aeris Halaquepts, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Alluvial flats

*Parent material:* Silty alluvium derived from volcanic rock, tuff, loess, volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 5,100 to 5,800 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Black greasewood, basin wildrye

**Typical Profile***Depth:* 0 to 7 inches*Texture:* Silt loam*Structure:* Platy*Consistence:* Slightly hard, very friable*Reaction:* Very strongly alkaline*Salinity:* 30 to 50 millimhos per centimeter*Sodicity (SAR):* 13 to 25*Depth:* 7 to 18 inches*Texture:* Silt loam, very fine sandy loam*Structure:* Subangular blocky*Consistence:* Soft, very friable*Reaction:* Strongly alkaline*Salinity:* 16 to 30 millimhos per centimeter*Sodicity (SAR):* 46 to 60*Depth:* 18 to 60 inches*Texture:* Stratified silt loam to clay loam*Structure:* Massive*Consistence:* Slightly hard, friable*Reaction:* Strongly alkaline*Salinity:* 16 to 30 millimhos per centimeter*Sodicity (SAR):* 25 to 35**Soil and Water Features***Depth to a seasonal high water table:* 30 to 48 inches*Frequency of flooding:* Occasional for brief to long periods in February through June*Permeability:* Moderately slow*Available water capacity:* 11 to 12 inches*Water-supplying capacity:* 7 inches*Runoff:* Very slow*Hydrologic group:* C*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—4L*Hazard of erosion:* By water—slight; by wind—severe*Shrink-swell potential:* Moderate*Corrosivity:* To steel—high; to concrete—high*Potential for frost action:* High**Contrasting Inclusions****Inclusion 1***Classification:* Aquic Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic*Positions on landscape:* Lake plain remnants*Distinctive present vegetation:* Rubber rabbitbrush, black greasewood**Inclusion 2***Classification:* Aeris Fluvaquents, fine-silty, mixed (calcareous), mesic*Positions on landscape:* Flood plains*Distinctive present vegetation:* Basin wildrye, black greasewood**Inclusion 3***Classification:* Aeris Halaquents, fine, montmorillonitic, mesic*Positions on landscape:* Alluvial flat remnants*Distinctive present vegetation:* Black greasewood, basin wildrye**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements***Wild herbaceous plants (nonirrigated):* Very poor*Shrubs (nonirrigated):* Very poor*Wetland plants:* Poor*Shallow water areas:* Fair**Suitability and Limitations for Selected Uses***Range seeding:* Poor—excess salt, excess sodium*Roadfill:* Poor—low strength*Topsoil:* Poor—excess salt, excess sodium*Daily cover for landfill:* Poor—excess salt, excess sodium*Shallow excavations:* Moderate—wetness, flooding*Local roads and streets:* Severe—flooding, frost action*Pond reservoir areas:* Moderate—seepage*Embankments, dikes, and levees:* Severe—excess salt, excess sodium*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines**Interpretive Groups***Land capability classification:* Wendane soil—VIIw, nonirrigated*Range site:* Wendane soil—024X011N; Inclusions 1, 2, and 3—024X007N**1145—Wendane-Playas association***Positions on landscape:* Basin floors**Composition***Major components:*

Wendane silt loam, occasionally flooded, 0 to 2 percent slopes—70 percent

Playas—15 percent

*Contrasting inclusions:*

Aquic Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—5 percent

Wendane silt loam, frequently flooded, 0 to 2 percent slopes—5 percent

Isolde fine sand, 4 to 30 percent slopes—5 percent

**Characteristics of the Wendane Soil***Classification:* Aeris Halaquents, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Alluvial flats

*Parent material:* Silty alluvium derived from volcanic rock, tuff, loess, and volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 5,100 to 6,100 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Black greasewood, basin wildrye

### **Typical Profile**

*Depth:* 0 to 7 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Very strongly alkaline

*Salinity:* 30 to 50 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

*Depth:* 7 to 18 inches

*Texture:* Silt loam, very fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

*Depth:* 18 to 60 inches

*Texture:* Stratified silt loam to clay loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 25 to 35

### **Soil and Water Features**

*Depth to a seasonal high water table:* 30 to 48 inches

*Frequency of flooding:* Occasional for brief to long periods in February through June

*Permeability:* Moderately slow

*Available water capacity:* 11 to 12 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Very slow

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—4L

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* High

### **Characteristics of the Playas**

*Positions on landscape:* Small, irregularly shaped sink areas

*Parent material:* Fine-textured sediment

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Aquic Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Inset fans on alluvial flats

*Distinctive present vegetation:* Iodinebush, alkali sacaton, inland saltgrass

#### **Inclusion 2**

*Classification:* Aeris Halaquepts, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* The lower parts of alluvial flats

*Distinctive present vegetation:* Alkali rabbitbrush, black greasewood, basin wildrye

#### **Inclusion 3**

*Classification:* Typic Torripsamments, mixed, mesic

*Positions on landscape:* Sand dunes

*Distinctive present vegetation:* Spiny hopsage, black greasewood, needlegrass

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Wendane Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

*Wetland plants:* Poor

*Shallow water areas:* Fair

### **Suitability and Limitations for Selected Uses**

#### **Wendane Soil**

*Range seeding:* Poor—excess salt, excess sodium

*Roadfill:* Poor—low strength

*Topsoil:* Poor—excess salt, excess sodium

*Daily cover for landfill:* Poor—excess salt, excess sodium

*Shallow excavations:* Moderate—wetness, flooding

*Local roads and streets:* Severe—flooding, frost action

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Wendane soil—VIIw, nonirrigated; Playas—VIIIw, nonirrigated

*Range site:* Wendane soil—024X011N; Playas—none;

Inclusion 1—024X010N; Inclusion 2—024X007N;

Inclusion 3—027X016N

**1146—Wendane-Sonoma-Valmy association***Positions on landscape:* Alluvial flats, stream flood plains***Composition******Major components:***

Wendane silt loam, frequently flooded, 0 to 2 percent slopes—35 percent

Sonoma silt loam, drained, occasionally flooded, 0 to 2 percent slopes—30 percent

Valmy very fine sandy loam, 0 to 2 percent slopes—20 percent

***Contrasting inclusions:***

Paranat silt loam, 0 to 2 percent slopes—6 percent

Aeric Halaquepts, fine-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—6 percent

Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic, 2 to 8 percent slopes—3 percent

***Characteristics of the Wendane Soil****Classification:* Aeric Halaquepts, fine-silty, mixed (calcareous), mesic*Positions on landscape:* Alluvial flats*Parent material:* Silty alluvium derived from volcanic rock, tuff, loess, and volcanic ash*Slope:* 0 to 2 percent*Elevation:* 5,200 to 5,400 feet*Average annual precipitation:* About 7 inches*Average annual air temperature:* About 49 degrees F*Frost-free season:* About 120 days*Dominant present vegetation:* Black greasewood, basin wildrye***Typical Profile****Depth:* 0 to 7 inches*Texture:* Silt loam*Structure:* Platy*Consistence:* Slightly hard, very friable*Reaction:* Strongly alkaline*Salinity:* 30 to 50 millimhos per centimeter*Sodicity (SAR):* 13 to 25*Depth:* 7 to 18 inches*Texture:* Silt loam, very fine sandy loam*Structure:* Subangular blocky*Consistence:* Soft, very friable*Reaction:* Strongly alkaline*Salinity:* 16 to 30 millimhos per centimeter*Sodicity (SAR):* 46 to 60*Depth:* 18 to 60 inches*Texture:* Stratified silt loam to clay loam*Structure:* Massive*Consistence:* Slightly hard, friable*Reaction:* Strongly alkaline*Salinity:* 16 to 30 millimhos per centimeter*Sodicity (SAR):* 25 to 35***Soil and Water Features****Depth to a seasonal high water table:* 30 to 48 inches*Frequency of flooding:* Frequent for brief to long periods in February through June*Permeability:* Moderately slow*Available water capacity:* 11 to 13 inches*Water-supplying capacity:* 8 inches*Runoff:* Very slow*Hydrologic group:* C*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—4L*Hazard of erosion:* By water—slight; by wind—severe*Shrink-swell potential:* Moderate*Corrosivity:* To steel—high; to concrete—high*Potential for frost action:* High***Characteristics of the Sonoma Soil****Classification:* Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic*Positions on landscape:* Flood plains*Parent material:* Mixed silty alluvium that includes volcanic ash*Slope:* 0 to 2 percent*Elevation:* 5,200 to 5,400 feet*Average annual precipitation:* About 7 inches*Average annual air temperature:* About 50 degrees F*Frost-free season:* About 110 days*Dominant present vegetation:* Black greasewood, basin wildrye, basin big sagebrush***Typical Profile****Depth:* 0 to 10 inches*Texture:* Silt loam*Structure:* Platy*Consistence:* Slightly hard, very friable*Reaction:* Moderately alkaline*Salinity:* 4 to 8 millimhos per centimeter*Sodicity (SAR):* 2 to 10*Depth:* 10 to 60 inches*Texture:* Silt loam, silty clay loam*Structure:* Subangular blocky*Consistence:* Slightly hard, very friable*Reaction:* Strongly alkaline*Salinity:* 2 to 8 millimhos per centimeter*Sodicity (SAR):* 2 to 10***Soil and Water Features****Depth to a seasonal high water table:* 42 to 60 inches*Frequency of flooding:* Occasional for brief to long periods in March through June*Permeability:* Moderately slow*Available water capacity:* 11 to 12 inches*Water-supplying capacity:* 9 inches

*Runoff:* Very slow

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.43; T value—5;  
wind erodibility group—4L

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* High

### **Characteristics of the Valmy Soil**

*Classification:* Durorthidic Torriorthents, coarse-loamy,  
mixed (calcareous), mesic

*Positions on landscape:* Fan skirts, inset fans

*Parent material:* Loess cap that is high in content of  
volcanic ash over mixed alluvium

*Slope:* 0 to 2 percent

*Elevation:* 5,200 to 5,400 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 50 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Basin wildrye, black  
greasewood, basin big sagebrush

### **Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Very fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 42 inches

*Texture:* Fine sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 42 to 60 inches

*Texture:* Gravelly sand, very gravelly sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Moderately alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60  
inches

*Frequency of flooding:* None

*Permeability:* Moderately rapid

*Available water capacity:* 4.7 to 6.8 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.43; T value—4;  
wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Fluvaquent Haplaquolls, fine-silty, mixed  
(calcareous), mesic

*Positions on landscape:* Flood plains adjacent to stream  
channels

*Distinctive present vegetation:* Creeping wildrye, sedge,  
rush, willow

#### **Inclusion 2**

*Classification:* Aeris Halaquepts, fine-silty, mixed  
(calcareous), mesic

*Positions on landscape:* Flood plain remnants

*Distinctive present vegetation:* Torrey quailbush, black  
greasewood

#### **Inclusion 3**

*Classification:* Durorthidic Torriorthents, coarse-loamy,  
mixed (calcareous), mesic

*Positions on landscape:* Fanlettes over alluvial flats

*Distinctive present vegetation:* Black greasewood,  
shadscale

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Wendane Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

*Wetland plants:* Poor

*Shallow water areas:* Fair

#### **Sonoma Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

*Wetland plants:* Fair

*Shallow water areas:* Fair

#### **Valmy Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

### **Suitability and Limitations for Selected Uses**

#### **Wendane Soil**

*Range seeding:* Poor—excess salt, excess sodium

*Roadfill:* Poor—low strength

*Topsoil:* Poor—excess salt, excess sodium

*Daily cover for landfill:* Poor—excess salt, excess  
sodium

*Pond reservoir areas:* Moderate—seepage  
*Embankments, dikes, and levees:* Severe—piping, excess salt  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Wendane soil—VIIw, nonirrigated; Bubus soil—VII, nonirrigated  
*Range site:* Wendane soil—024X007N; Bubus soil—024X003N; Inclusion 1—024X006N; Inclusion 2—024X003N; Inclusion 3—024X002N

## **1169—Whirlo-Broyles association**

*Positions on landscape:* Fan skirts, inset fans

### **Composition**

*Major components:*

Whirlo gravelly very fine sandy loam, 4 to 8 percent slopes—60 percent  
 Broyles very fine sandy loam, 2 to 4 percent slopes—25 percent

*Contrasting inclusions:*

Xerollic Camborthids, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—9 percent  
 Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 2 to 8 percent slopes—6 percent

### **Characteristics of the Whirlo Soil**

*Classification:* Typic Camborthids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* The upper fan skirts  
*Parent material:* Mixed alluvium that includes a large amount of loess  
*Slope:* 4 to 8 percent  
*Elevation:* 5,200 to 5,500 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass

### **Typical Profile**

*Depth:* 0 to 12 inches  
*Texture:* Gravelly very fine sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5  
*Depth:* 12 to 24 inches  
*Texture:* Very gravelly fine sandy loam  
*Structure:* Massive

*Consistence:* Soft, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 8 millimhos per centimeter  
*Sodicity (SAR):* 5 to 13  
*Depth:* 24 to 60 inches  
*Texture:* Very gravelly coarse sandy loam  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Moderately alkaline  
*Salinity:* 4 to 16 millimhos per centimeter  
*Sodicity (SAR):* 13 to 25

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately rapid  
*Available water capacity:* 4.7 to 6.0 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.28; T value—5; wind erodibility group—4  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

### **Characteristics of the Broyles Soil**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* The lower fan skirts and inset fans  
*Parent material:* Thin loess mantle over mixed alluvium  
*Slope:* 2 to 4 percent  
*Elevation:* 5,200 to 5,500 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bluegrass

### **Typical Profile**

*Depth:* 0 to 11 inches  
*Texture:* Very fine sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 2 to 10  
*Depth:* 11 to 60 inches  
*Texture:* Stratified loam to gravelly loamy sand  
*Structure:* Massive  
*Consistence:* Hard, friable



*Reaction:* Strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately rapid  
*Available water capacity:* 6.2 to 7.5 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—moderate  
*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Xerollic Camborthids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* The upper inset fans, areas adjacent to fan skirts  
*Distinctive present vegetation:* Needlegrass, Wyoming big sagebrush

##### **Inclusion 2**

*Classification:* Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic  
*Positions on landscape:* Margins of shallow channels  
*Distinctive present vegetation:* Spiny hopsage, Wyoming big sagebrush

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Whirlo Soil**

*Wild herbaceous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Poor

##### **Broyles Soil**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor

#### **Suitability and Limitations for Selected Uses**

##### **Whirlo Soil**

*Range seeding:* Poor—too arid  
*Roadfill:* Good  
*Topsoil:* Poor—small stones, area reclaim, excess salt  
*Daily cover for landfill:* Poor—seepage, small stones  
*Shallow excavations:* Slight  
*Local roads and streets:* Slight  
*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage  
*Sand:* Probable source  
*Gravel:* Probable source

##### **Broyles Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium  
*Roadfill:* Good  
*Topsoil:* Poor—small stones  
*Daily cover for landfill:* Fair—too sandy, small stones  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Slight  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—piping  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Whirlo soil—IIIe, irrigated, and VIIc, nonirrigated; Broyles soil—Ile, irrigated, and VIIc, nonirrigated  
*Range site:* Whirlo and Broyles soils—024X002N; Inclusion 1—028B010N; Inclusion 2—024X020N

#### **1173—Wholan silt loam, alkaline**

*Positions on landscape:* Fan skirts

#### **Composition**

##### *Major component:*

Wholan silt loam, alkaline, 0 to 2 percent slopes—90 percent

##### *Contrasting inclusions:*

Broyles very fine sandy loam, 0 to 2 percent slopes—7 percent

Rasille silt loam, 0 to 2 percent slopes—3 percent

#### **Characteristics of the Wholan Soil**

*Classification:* Typic Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Fan skirts

*Parent material:* Loess mantle over silty alluvium

*Slope:* 0 to 2 percent

*Elevation:* 5,100 to 5,800 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, bluegrass, sickle saltbush

#### **Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 60 inches

*Texture:* Silt loam, very fine sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Very strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Rare

*Permeability:* Moderate

*Available water capacity:* 10 to 11 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Fan skirt remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush

##### **Inclusion 2**

*Classification:* Durixerollic Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Fan drainageways

*Distinctive present vegetation:* Bottlebrush squirreltail, Wyoming big sagebrush

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

#### **Suitability and Limitations for Selected Uses**

*Range seeding:* Poor—too arid, excess salts

*Roadfill:* Good

*Topsoil:* Poor—excess salt

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—flooding

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Restrictive Features for Selected Practices**

*Drainage:* Deep to water

*Irrigation:* Erodes easily

*Terraces and diversions:* Erodes easily

#### **Interpretive Groups**

*Land capability classification:* Wholan soil—IIC, irrigated, and VIIc, nonirrigated

*Range site:* Wholan soil—024X012N; Inclusion 1—024X002N; Inclusion 2—028B010N

### **1177—Wholan-Rasille association, alkaline**

*Positions on landscape:* Fan skirts, inset fans

#### **Composition**

*Major components:*

Wholan very fine sandy loam, alkaline, 0 to 2 percent slopes—65 percent

Rasille silt loam, 0 to 2 percent slopes—20 percent

*Contrasting inclusions:*

Kelk silt loam, occasionally flooded, 0 to 2 percent slopes—5 percent

Xerollic Camborthids, coarse-loamy, mixed, mesic, 0 to 2 percent slopes—5 percent

Creemon very fine sandy loam, 0 to 2 percent slopes—5 percent

#### **Characteristics of the Wholan Soil**

*Classification:* Typic Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Broad fan skirts

*Parent material:* Loess mantle over silty alluvium

*Slope:* 0 to 2 percent

*Elevation:* 5,400 to 5,800 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, bluegrass, sickle saltbush

#### **Typical Profile**

*Depth:* 0 to 5 inches

*Texture:* Very fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 5 to 60 inches

*Texture:* Silt loam, very fine sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Very strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Rare

*Permeability:* Moderate

*Available water capacity:* 10 to 11 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

#### **Characteristics of the Rasille Soil**

*Classification:* Durixerollic Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Inset fans, fan drainageways

*Parent material:* Silty alluvium derived from loess and various kinds of rock

*Slope:* 0 to 2 percent

*Elevation:* 5,400 to 5,800 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bottlebrush squirreltail, Indian ricegrass, needlegrass, Wyoming big sagebrush

#### **Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 15 inches

*Texture:* Silt loam

*Structure:* Prismatic

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 15 to 60 inches

*Texture:* Silt loam, very fine sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Rare

*Permeability:* Moderate

*Available water capacity:* 11 to 12 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Durixerollic Camborthids, fine-silty, mixed, mesic

*Positions on landscape:* Inset fans on the lower margins of fan skirts

*Distinctive present vegetation:* Basin big sagebrush, black greasewood

##### **Inclusion 2**

*Classification:* Xerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* The higher areas on inset fans

*Distinctive present vegetation:* Wyoming big sagebrush, spiny hopsage

##### **Inclusion 3**

*Classification:* Duric Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Fan skirt remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Wholan Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

##### **Rasille Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

***Suitability and Limitations for Selected Uses*****Wholan Soil***Range seeding:* Poor—too arid, excess salt*Roadfill:* Good*Topsoil:* Poor—excess salt*Daily cover for landfill:* Good*Shallow excavations:* Slight*Local roads and streets:* Moderate—flooding*Pond reservoir areas:* Moderate—seepage*Embankments, dikes, and levees:* Severe—piping*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines**Rasille Soil***Range seeding:* Fair—too arid*Roadfill:* Good*Topsoil:* Fair—excess salt*Daily cover for landfill:* Good*Shallow excavations:* Slight*Local roads and streets:* Moderate—flooding, frost action*Pond reservoir areas:* Moderate—seepage*Embankments, dikes, and levees:* Severe—piping*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines***Restrictive Features for Selected Practices*****Wholan Soil***Drainage:* Deep to water*Irrigation:* Erodes easily*Terraces and diversions:* Erodes easily**Rasille Soil***Drainage:* Deep to water*Irrigation:* Erodes easily, excess salt*Terraces and diversions:* Erodes easily***Interpretive Groups****Land capability classification:* Wholan soil—IIC, irrigated, and VIIc, nonirrigated; Rasille soil—IIC, irrigated, and VIc, nonirrigated*Range site:* Wholan soil—024X012N; Rasille soil—024X005N; Inclusion 1—024X006N; Inclusion 2—024X020N; Inclusion 3—024X002N**1178—Wholan-Rasille association, nonalkaline***Positions on landscape:* Fan skirts***Composition****Major components:*

Wholan silt loam, 0 to 2 percent slopes—60 percent

Rasille silt loam, gravelly substratum, 0 to 2 percent slopes—25 percent

*Contrasting inclusions:*

Wholan silt loam, alkaline, 0 to 2 percent slopes—5 percent

Broyles very fine sandy loam, 0 to 4 percent slopes—5 percent

Orovada fine sandy loam, 0 to 2 percent slopes—5 percent

***Characteristics of the Wholan Soil****Classification:* Typic Camborthids, coarse-silty, mixed, mesic*Positions on landscape:* Smooth fan skirts*Parent material:* Loess mantle over silty alluvium*Slope:* 0 to 2 percent*Elevation:* 5,000 to 5,400 feet*Average annual precipitation:* About 8 inches*Average annual air temperature:* About 49 degrees F*Frost-free season:* About 120 days*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, bluegrass, winterfat***Typical Profile****Depth:* 0 to 5 inches*Texture:* Silt loam*Structure:* Platy*Consistence:* Slightly hard, very friable*Reaction:* Moderately alkaline*Salinity:* 2 to 4 millimhos per centimeter*Sodicity (SAR):* 0 to 2*Depth:* 5 to 60 inches*Texture:* Silt loam, very fine sandy loam*Structure:* Massive*Consistence:* Slightly hard, very friable*Reaction:* Moderately alkaline*Salinity:* 4 to 8 millimhos per centimeter*Sodicity (SAR):* 0 to 5***Soil and Water Features****Depth to a seasonal high water table:* More than 60 inches*Frequency of flooding:* Rare*Permeability:* Moderate*Available water capacity:* 10 to 12 inches*Water-supplying capacity:* 8 inches*Runoff:* Slow*Hydrologic group:* B*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—5*Hazard of erosion:* By water—slight; by wind—slight*Shrink-swell potential:* Low*Corrosivity:* To steel—high; to concrete—low*Potential for frost action:* Low

### **Characteristics of the Rasille Soil**

*Classification:* Durixerollic Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Fan drainageways

*Parent material:* Silty alluvium derived from loess and various kinds of rock

*Slope:* 0 to 2 percent

*Elevation:* 5,000 to 5,400 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bottlebrush squirreltail, Indian ricegrass, needlegrass, Wyoming big sagebrush

### **Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 15 inches

*Texture:* Silt loam

*Structure:* Prismatic

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 15 to 41 inches

*Texture:* Silt loam, very fine sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

*Depth:* 41 to 60 inches

*Texture:* Stratified fine sandy loam to very gravelly coarse sand

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Rare

*Permeability:* Moderate

*Available water capacity:* 7.6 to 9.3 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Typic Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Convex areas of fan skirts

*Distinctive present vegetation:* Sickie saltbush

#### **Inclusion 2**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* The higher fan skirt remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush

#### **Inclusion 3**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Adjacent to channels and fanettes

*Distinctive present vegetation:* Wyoming big sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Wholan Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

#### **Rasille Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Wholan Soil**

*Range seeding:* Poor—too arid, excess salt

*Roadfill:* Good

*Topsoil:* Poor—excess salt

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—flooding

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Rasille Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Fair—area reclaim, excess salt

*Daily cover for landfill:* Fair—thin layer  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Moderate—flooding, frost action  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—piping  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

### **Restrictive Features for Selected Practices**

#### **Wholan Soil**

*Drainage:* Deep to water  
*Irrigation:* Erodes easily  
*Terraces and diversions:* Erodes easily

### **Interpretive Groups**

*Land capability classification:* Wholan soil—IIC, irrigated, and VIIc, nonirrigated; Rasille soil—IIC, irrigated, and VIc, nonirrigated  
*Range site:* Wholan soil—024X004N; Rasille soil—028B010N; Inclusion 1—024X012N; Inclusion 2—024X002N; Inclusion 3—028B010N

## **1281—Ricert-Whirlo-Pineval association**

*Positions on landscape:* Piedmont slopes

### **Composition**

*Major components:*  
 Ricert gravelly silt loam, 4 to 8 percent slopes—45 percent  
 Whirlo fine sandy loam, 4 to 8 percent slopes—25 percent  
 Pineval gravelly fine sandy loam, 4 to 8 percent slopes—15 percent  
*Contrasting inclusions:*  
 Duric Natrargids, fine, montmorillonitic, mesic, 4 to 15 percent slopes—9 percent  
 Xeric Torriorthents, loamy-skeletal, mixed, mesic, 15 to 30 percent slopes—4 percent  
 Typic Nadurargids, fine-loamy, mixed, mesic, 4 to 15 percent slopes—2 percent

### **Characteristics of the Ricert Soil**

*Classification:* Duric Natrargids, fine-loamy, mixed, mesic  
*Positions on landscape:* Fan piedmont remnants  
*Parent material:* Thin loess deposits over mixed alluvium  
*Slope:* 4 to 8 percent  
*Elevation:* 5,300 to 6,000 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bluegrass

### **Typical Profile**

*Depth:* 0 to 6 inches  
*Texture:* Gravelly silt loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5  
*Depth:* 6 to 18 inches  
*Texture:* Loam, clay loam  
*Structure:* Prismatic  
*Consistence:* Hard, firm  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 8 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46  
*Depth:* 18 to 60 inches  
*Texture:* Very gravelly sandy loam  
*Structure:* Massive  
*Consistence:* Soft, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 8 millimhos per centimeter  
*Sodicity (SAR):* 46 to 60

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 4 to 6 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Medium  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* Low

### **Characteristics of the Whirlo Soil**

*Classification:* Typic Camborthids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Inset fans, fan skirts  
*Parent material:* Mixed alluvium that includes a large amount of loess  
*Slope:* 4 to 8 percent  
*Elevation:* 5,300 to 6,000 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass

**Typical Profile***Depth:* 0 to 12 inches*Texture:* Fine sandy loam*Structure:* Platy*Consistence:* Slightly hard, very friable*Reaction:* Moderately alkaline*Salinity:* 2 to 4 millimhos per centimeter*Sodicity (SAR):* 0 to 2*Depth:* 12 to 24 inches*Texture:* Very gravelly fine sandy loam*Structure:* Massive*Consistence:* Soft, very friable*Reaction:* Moderately alkaline*Salinity:* 2 to 4 millimhos per centimeter*Sodicity (SAR):* 5 to 13*Depth:* 24 to 60 inches*Texture:* Very gravelly coarse sandy loam*Structure:* Single grain*Consistence:* Loose*Reaction:* Moderately alkaline*Salinity:* 4 to 16 millimhos per centimeter*Sodicity (SAR):* 13 to 25**Soil and Water Features***Depth to a seasonal high water table:* More than 60 inches*Frequency of flooding:* None*Permeability:* Moderately rapid*Available water capacity:* 4.2 to 5.4 inches*Water-supplying capacity:* 7 inches*Runoff:* Slow*Hydrologic group:* B*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—3*Hazard of erosion:* By water—slight; by wind—severe*Shrink-swell potential:* Low*Corrosivity:* To steel—high; to concrete—low*Potential for frost action:* Low**Characteristics of the Pineval Soil***Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic*Positions on landscape:* Fan aprons*Parent material:* Mixed alluvium*Slope:* 4 to 8 percent*Elevation:* 5,300 to 6,000 feet*Average annual precipitation:* About 8 inches*Average annual air temperature:* About 49 degrees F*Frost-free season:* About 120 days*Dominant present vegetation:* Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush**Typical Profile***Rock fragments on surface:* 10 percent pebbles*Depth:* 0 to 5 inches*Texture:* Gravelly fine sandy loam*Structure:* Platy*Consistence:* Slightly hard, friable*Reaction:* Moderately alkaline*Salinity:* 0 to 2 millimhos per centimeter*Sodicity (SAR):* 0 to 2*Depth:* 5 to 11 inches*Texture:* Very gravelly loam, very gravelly clay loam*Structure:* Subangular blocky*Consistence:* Slightly hard, friable*Reaction:* Moderately alkaline*Salinity:* 0 to 2 millimhos per centimeter*Sodicity (SAR):* 0 to 2*Depth:* 11 to 60 inches*Texture:* Extremely gravelly sandy loam, extremely gravelly loamy sand*Structure:* Single grain*Consistence:* Loose*Reaction:* Moderately alkaline*Salinity:* 0 to 2 millimhos per centimeter*Sodicity (SAR):* 0 to 2**Soil and Water Features***Depth to a seasonal high water table:* More than 60 inches*Frequency of flooding:* None*Permeability:* Moderately slow*Available water capacity:* 3.0 to 4.2 inches*Water-supplying capacity:* 8 inches*Runoff:* Medium*Hydrologic group:* B*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—4*Hazard of erosion:* By water—slight; by wind—slight*Shrink-swell potential:* Moderate*Corrosivity:* To steel—high; to concrete—low*Potential for frost action:* Moderate**Contrasting Inclusions****Inclusion 1***Classification:* Duric Natrargids, fine, montmorillonitic, mesic*Positions on landscape:* The higher areas on fan piedmont remnants*Distinctive present vegetation:* Shadscale, bud sagebrush**Inclusion 2***Classification:* Xeric Torriorthents, loamy-skeletal, mixed, mesic*Positions on landscape:* Side slopes of fan piedmont remnants*Distinctive present vegetation:* Wyoming big sagebrush, shadscale

**Inclusion 3**

*Classification:* Typic Nadurargids, fine-loamy, mixed, mesic

*Positions on landscape:* Shoulder slopes of fan piedmont remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Ricert Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

**Whirlo Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

**Pineval Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses****Ricert Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim, excess sodium

*Daily cover for landfill:* Poor—seepage, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage, excess sodium

*Sand:* Probable source

*Gravel:* Probable source

**Whirlo Soil**

*Range seeding:* Poor—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim, excess salt

*Daily cover for landfill:* Poor—seepage, small stones

*Shallow excavations:* Slight

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

**Pineval Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

**Interpretive Groups**

*Land capability classification:* Ricert soil—IVe, irrigated, and VIIc, nonirrigated; Whirlo soil—IIIe, irrigated, and VIIc, nonirrigated; Pineval soil—IVe, irrigated, and VIc, nonirrigated

*Range site:* Ricert and Whirlo soils—024X002N; Pineval soil—028B010N; Inclusion 1—024X002N; Inclusion 2—024X026N; Inclusion 3—024X002N

**1282—Ricert-Broyles association**

*Positions on landscape:* Fan piedmonts

**Composition**

*Major components:*

Ricert very fine sandy loam, 2 to 8 percent slopes—60 percent

Broyles very fine sandy loam, 2 to 8 percent slopes—25 percent

*Contrasting inclusions:*

Typic Camborthids, loamy-skeletal, mixed, mesic, 4 to 8 percent slopes—8 percent

Xerollic Camborthids, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—4 percent

Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—3 percent

**Characteristics of the Ricert Soil**

*Classification:* Duric Natrargids, fine-loamy, mixed, mesic

*Positions on landscape:* Fan piedmont remnants

*Parent material:* Thin loess deposits over mixed alluvium

*Slope:* 2 to 8 percent

*Elevation:* 5,200 to 5,600 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bluegrass

**Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Very fine sandy loam

*Structure:* Platy



*Consistence:* Soft, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5  
*Depth:* 6 to 18 inches  
*Texture:* Loam, clay loam  
*Structure:* Prismatic  
*Consistence:* Hard, firm  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 8 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46  
*Depth:* 18 to 60 inches  
*Texture:* Very gravelly sandy loam  
*Structure:* Massive  
*Consistence:* Soft, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 8 millimhos per centimeter  
*Sodicity (SAR):* 46 to 60

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 4 to 6 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Medium  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.49; T value—5; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* Low

#### **Characteristics of the Broyles Soil**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Fan aprons  
*Parent material:* Thin loess mantle over mixed alluvium  
*Slope:* 2 to 8 percent  
*Elevation:* 5,200 to 5,600 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bluegrass

#### **Typical Profile**

*Depth:* 0 to 13 inches  
*Texture:* Very fine sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 2 to 10  
*Depth:* 13 to 60 inches  
*Texture:* Stratified loam to gravelly loamy sand  
*Structure:* Massive  
*Consistence:* Hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately rapid  
*Available water capacity:* 6.0 to 7.5 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—moderate  
*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Typic Camborthids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Side slopes of fan piedmont remnants  
*Distinctive present vegetation:* Shadscale, bud sagebrush

##### **Inclusion 2**

*Classification:* Xerollic Camborthids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Inset fans  
*Distinctive present vegetation:* Wyoming big sagebrush

##### **Inclusion 3**

*Classification:* Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic  
*Positions on landscape:* Fan skirts  
*Distinctive present vegetation:* Shadscale, bud sagebrush

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Ricert Soil**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor

**Broyles Soil***Wild herbaceous plants (nonirrigated):* Very poor*Shrubs (nonirrigated):* Very poor***Suitability and Limitations for Selected Uses*****Ricert Soil***Range seeding:* Poor—too arid, excess salt, excess sodium*Roadfill:* Good*Topsoil:* Poor—small stones, area reclaim, excess sodium*Daily cover for landfill:* Poor—seepage, small stones*Shallow excavations:* Severe—cutbanks cave*Local roads and streets:* Slight*Pond reservoir areas:* Severe—seepage*Embankments, dikes, and levees:* Severe—seepage, excess sodium*Sand:* Probable source*Gravel:* Probable source**Broyles Soil***Range seeding:* Poor—too arid, excess salt*Roadfill:* Good*Topsoil:* Poor—small stones*Daily cover for landfill:* Fair—too sandy, small stones*Shallow excavations:* Severe—cutbanks cave*Local roads and streets:* Slight*Pond reservoir areas:* Severe—seepage*Embankments, dikes, and levees:* Severe—seepage*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines***Interpretive Groups****Land capability classification:* Ricert soil—Ive, irrigated, and VIIs, nonirrigated; Broyles soil—IIle, irrigated, and VIIc, nonirrigated*Range site:* Ricert and Broyles soils—024X002N;

Inclusion 1—024X002N; Inclusion 2—024X020N;

Inclusion 3—024X002N

**1284—Ricert-Zineb-Pineval association***Positions on landscape:* Fan piedmonts***Composition****Major components:*

Ricert very gravelly very fine sandy loam, 2 to 4 percent slopes—40 percent

Zineb very gravelly sandy loam, 4 to 8 percent slopes—25 percent

Pineval gravelly fine sandy loam, 2 to 4 percent slopes—20 percent

*Contrasting inclusions:*

Durorthidic Torriorthents, loamy-skeletal, mixed

(calcareous), mesic, 2 to 8 percent slopes—7 percent

Durixerollic Camborthids, loamy-skeletal, mixed, mesic, 0 to 4 percent slopes—5 percent

Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 0 to 4 percent slopes—3 percent

***Characteristics of the Ricert Soil****Classification:* Duric Natrargids, fine-loamy, mixed, mesic*Positions on landscape:* The lower summits of fan piedmont remnants*Parent material:* Thin loess deposits over mixed alluvium*Slope:* 2 to 4 percent*Elevation:* 6,200 to 6,500 feet*Average annual precipitation:* About 8 inches*Average annual air temperature:* About 48 degrees F*Frost-free season:* About 120 days*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bluegrass***Typical Profile****Depth:* 0 to 6 inches*Texture:* Very gravelly very fine sandy loam*Structure:* Platy*Consistence:* Soft, very friable*Reaction:* Moderately alkaline*Salinity:* 0 to 2 millimhos per centimeter*Sodicity (SAR):* 0 to 5*Depth:* 6 to 18 inches*Texture:* Loam, clay loam*Structure:* Prismatic*Consistence:* Hard, firm*Reaction:* Strongly alkaline*Salinity:* 2 to 8 millimhos per centimeter*Sodicity (SAR):* 25 to 46*Depth:* 18 to 60 inches*Texture:* Very gravelly sandy loam*Structure:* Massive*Consistence:* Soft, very friable*Reaction:* Strongly alkaline*Salinity:* 2 to 8 millimhos per centimeter*Sodicity (SAR):* 46 to 60***Soil and Water Features****Depth to a seasonal high water table:* More than 60 inches*Frequency of flooding:* None*Permeability:* Moderately slow*Available water capacity:* 4 to 6 inches*Water-supplying capacity:* 7 inches*Runoff:* Medium*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.10; T value—5;  
wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

### **Characteristics of the Zineb Soil**

*Classification:* Durixerollic Camborthids, loamy-skeletal,  
mixed, mesic

*Positions on landscape:* Inset fans

*Parent material:* Mixed alluvium that includes volcanic  
ash

*Slope:* 4 to 8 percent

*Elevation:* 6,200 to 6,500 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, Indian  
ricegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 20 percent pebbles

*Depth:* 0 to 6 inches

*Texture:* Very gravelly sandy loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 13 inches

*Texture:* Gravelly loam, gravelly very fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 13 to 19 inches

*Texture:* Very gravelly sandy loam, very gravelly loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 19 to 27 inches

*Texture:* Extremely cobbly sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 27 to 60 inches

*Texture:* Extremely cobbly coarse sand, extremely  
cobbly loamy coarse sand

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60  
inches

*Frequency of flooding:* None

*Permeability:* Moderate over rapid

*Available water capacity:* 3.0 to 4.2 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.10; T value—5;  
wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Pineval Soil**

*Classification:* Durixerollic Haplargids, loamy-skeletal,  
mixed, mesic

*Positions on landscape:* The higher summits of fan  
piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 6,200 to 6,600 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Indian ricegrass,  
bluegrass, needlegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 10 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 5 to 11 inches

*Texture:* Very gravelly loam, very gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 11 to 60 inches

*Texture:* Extremely gravelly sandy loam, extremely gravelly loamy sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate slow

*Available water capacity:* 3.0 to 4.2 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic

*Positions on landscape:* Side slopes of fan piedmont remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush

##### **Inclusion 2**

*Classification:* Durixerollic Camborthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Fan skirts near seeps

*Distinctive present vegetation:* Wyoming big sagebrush, black greasewood

##### **Inclusion 3**

*Classification:* Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic

*Positions on landscape:* Fan drainageways

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Ricert Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

##### **Zineb Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

##### **Pineval Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

##### **Ricert Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim, excess sodium

*Daily cover for landfill:* Poor—seepage, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage, excess sodium

*Sand:* Probable source

*Gravel:* Probable source

##### **Zineb Soil**

*Range seeding:* Poor—small stones, droughty

*Roadfill:* Fair—large stones

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—frost action, large stones

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—large stones

*Gravel:* Improbable source—large stones

##### **Pineval Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

#### **Interpretive Groups**

*Land capability classification:* Ricert soil—IVs, irrigated, and VIIs, nonirrigated; Zineb soil—VIIs, nonirrigated; Pineval soil—IVe, irrigated, and VIs, nonirrigated

*Range site:* Ricert soil—024X002N; Zineb and Pineval soils—028B010N; Inclusion 1—028B017N; Inclusion 2—024X022N; Inclusion 3—028B010N

## 1285—Ricert-Bubus-Broyles association

*Positions on landscape:* Piedmont slopes

### **Composition**

*Major components:*

Ricert gravelly silt loam, 0 to 2 percent slopes—45 percent

Bubus very fine sandy loam, 0 to 2 percent slopes—25 percent

Broyles silt loam, 2 to 4 percent slopes—15 percent

*Contrasting inclusions:*

Orovada fine sandy loam, 0 to 4 percent slopes—9 percent

Valmy very fine sandy loam, 0 to 2 percent slopes—6 percent

### **Characteristics of the Ricert Soil**

*Classification:* Duric Natrargids, fine-loamy, mixed, mesic

*Positions on landscape:* Summits of fan piedmont remnants

*Parent material:* Thin loess deposits over mixed alluvium

*Slope:* 0 to 2 percent

*Elevation:* 5,200 to 5,500 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bluegrass

### **Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Gravelly silt loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 6 to 18 inches

*Texture:* Loam, clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Strongly alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

*Depth:* 18 to 60 inches

*Texture:* Very gravelly sandy loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 4 to 6 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

### **Characteristics of the Bubus Soil**

*Classification:* Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic

*Positions on landscape:* The lower fan skirt margins and inset fans

*Parent material:* Mixed alluvium that is high in content of pyroclastic material

*Slope:* 0 to 2 percent

*Elevation:* 5,200 to 5,500 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Shadscale, black greasewood, bottlebrush squirreltail

### **Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Very fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

*Depth:* 6 to 60 inches

*Texture:* Stratified sandy loam to silt loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 9 to 10 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.49; T value—5;  
wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

### **Characteristics of the Broyles Soil**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* The higher parts of fan skirts

*Parent material:* Thin loess mantle over mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 5,200 to 5,500 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Shadscale, bud  
sagebrush, Indian ricegrass, bluegrass

### **Typical Profile**

*Depth:* 0 to 13 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

*Depth:* 13 to 60 inches

*Texture:* Stratified loam to gravelly loamy sand

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60  
inches

*Frequency of flooding:* None

*Permeability:* Moderately rapid

*Available water capacity:* 6.2 to 7.5 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5;  
wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—moderate

*Potential for frost action:* Low

## **Contrasting Inclusions**

### **Inclusion 1**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Fan drainageways

*Distinctive present vegetation:* Bottlebrush squirreltail, needlegrass, Wyoming big sagebrush

### **Inclusion 2**

*Classification:* Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic

*Positions on landscape:* Fan skirt margins adjacent to stream terraces

*Distinctive present vegetation:* Shadscale, Wyoming big sagebrush, black greasewood

## **Major Current Uses**

Livestock grazing, wildlife habitat

## **Suitability for Wildlife Habitat Elements**

### **Ricert Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

### **Bubus Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

### **Broyles Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

## **Suitability and Limitations for Selected Uses**

### **Ricert Soil**

*Range seeding:* Poor—too arid, excess sodium

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim, excess sodium

*Daily cover for landfill:* Poor—seepage, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage, excess sodium

*Sand:* Probable source

*Gravel:* Probable source

### **Bubus Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium

*Roadfill:* Good

*Topsoil:* Poor—excess salt

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Slight

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping, excess salt

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Broyles Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium

*Roadfill:* Good

*Topsoil:* Poor—small stones

*Daily cover for landfill:* Fair—too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Ricert soil—IVs, irrigated, and VIIs, nonirrigated; Bubus soil—IIIs, irrigated, and VIIs, nonirrigated; Broyles soil—Ile, irrigated, and VIIc, nonirrigated

*Range site:* Ricert and Broyles soils—024X002N; Bubus soil—024X003N; Inclusion 1—028B010N; Inclusion 2—024X022N

## **1286—Ricert-Tenabo-Broyles association**

*Positions on landscape:* Fan piedmonts

### **Composition**

*Major components:*

Ricert gravelly fine sandy loam, 4 to 8 percent slopes—45 percent

Tenabo gravelly very fine sandy loam, 2 to 4 percent slopes—25 percent

Broyles very fine sandy loam, 2 to 4 percent slopes—15 percent

*Contrasting inclusions:*

Orovada fine sandy loam, 2 to 4 percent slopes—7 percent

Chiara gravelly loam, 2 to 8 percent slopes—5 percent

Typic Torriorthents, loamy, mixed (calcareous), mesic, shallow, 15 to 30 percent slopes—3 percent

### **Characteristics of the Ricert Soil**

*Classification:* Duric Natrargids, fine-loamy, mixed, mesic

*Positions on landscape:* Shoulder slopes of fan piedmont remnants

*Parent material:* Thin loess deposits over mixed alluvium

*Slope:* 4 to 8 percent

*Elevation:* 5,400 to 5,800 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bluegrass

### **Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 6 to 18 inches

*Texture:* Loam, clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Strongly alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

*Depth:* 18 to 60 inches

*Texture:* Very gravelly sandy loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 4 to 6 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.20; T value—5; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

### **Characteristics of the Tenabo Soil**

*Classification:* Typic Nadurargids, loamy, mixed, mesic, shallow

*Positions on landscape:* Summits of fan piedmont remnants

*Parent material:* Thin loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 5,400 to 5,800 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass

#### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Gravelly very fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 4 to 15 inches

*Texture:* Clay loam, gravelly clay loam, silty clay loam

*Structure:* Prismatic

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

*Depth:* 15 to 28 inches

*Material:* Indurated hardpan

*Structure:* Platy

*Consistence:* Extremely hard, extremely firm

*Depth:* 28 to 60 inches

*Texture:* Stratified very gravelly sandy loam to extremely gravelly coarse sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

#### **Soil and Water Features**

*Depth to the hardpan:* 9 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 2.5 to 2.9 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—moderate

*Potential for frost action:* Low

#### **Characteristics of the Broyles Soil**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Inset fans

*Parent material:* Thin loess mantle over mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 5,400 to 5,800 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bluegrass

#### **Typical Profile**

*Depth:* 0 to 13 inches

*Texture:* Very fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

*Depth:* 13 to 60 inches

*Texture:* Stratified loam to gravelly loamy sand

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately rapid

*Available water capacity:* 6.0 to 7.5 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—moderate

*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Narrow inset fans, the lower side slopes of fan piedmonts

*Distinctive present vegetation:* Wyoming big sagebrush, spiny hopsage

##### **Inclusion 2**

*Classification:* Xerollic Durorthids, loamy, mixed, mesic, shallow



*Positions on landscape:* Shoulder slopes of fan piedmont remnants

*Distinctive present vegetation:* Wyoming big sagebrush, downy rabbitbrush

### **Inclusion 3**

*Classification:* Typic Torriorthents, loamy, mixed (calcareous), mesic, shallow

*Positions on landscape:* Convex rock pediment remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush, downy rabbitbrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Ricert Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Tenabo Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Broyles Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

### **Suitability and Limitations for Selected Uses**

#### **Ricert Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim, excess sodium

*Daily cover for landfill:* Poor—seepage, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage, excess sodium

*Sand:* Probable source

*Gravel:* Probable source

#### **Tenabo Soil**

*Range seeding:* Poor—too arid, droughty, excess sodium

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—cemented pan, small stones, too sandy

*Daily cover for landfill:* Poor—cemented pan, seepage, too sandy

*Shallow excavations:* Severe—cemented pan, cutbanks cave

*Local roads and streets:* Severe—cemented pan

*Pond reservoir areas:* Severe—seepage, cemented pan

*Embankments, dikes, and levees:* Severe—seepage, excess sodium, excess salt

*Sand:* Probable source

*Gravel:* Probable source

### **Broyles Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium

*Roadfill:* Good

*Topsoil:* Poor—small stones, excess salt

*Daily cover for landfill:* Fair—too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Ricert and Tenabo soils—Ive, irrigated, and VIIs, nonirrigated; Broyles soil—Ile, irrigated, and VIIc, nonirrigated

*Range site:* Ricert, Tenabo, and Broyles soils—024X002N; Inclusions 1 and 2—028B010N; Inclusion 3—024X002N

## **1287—Ricert-Orovada-Broyles association**

*Positions on landscape:* Piedmont slopes

### **Composition**

*Major components:*

Ricert very gravelly very fine sandy loam, 2 to 4 percent slopes—50 percent

Orovada gravelly very fine sandy loam, 2 to 4 percent slopes—20 percent

Broyles gravelly very fine sandy loam, 2 to 8 percent slopes—15 percent

*Contrasting inclusions:*

Durixerollic Haplargids, fine-loamy, mixed, mesic, 2 to 8 percent slopes—5 percent

Zineb gravelly loam, 2 to 8 percent slopes—5 percent

Haplic Durargids, loamy, mixed, mesic, shallow, 2 to 8 percent slopes—5 percent

### **Characteristics of the Ricert Soil**

*Classification:* Duric Natrargids, fine-loamy, mixed, mesic

*Positions on landscape:* Fan piedmont remnants

*Parent material:* Thin loess deposits over mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 6,000 to 6,500 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bluegrass

**Typical Profile**

*Depth:* 0 to 7 inches  
*Texture:* Very gravelly very fine sandy loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

*Depth:* 7 to 20 inches  
*Texture:* Loam, clay loam  
*Structure:* Prismatic  
*Consistence:* Hard, firm  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 8 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46

*Depth:* 20 to 60 inches  
*Texture:* Very gravelly sandy loam  
*Structure:* Massive  
*Consistence:* Soft, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 8 millimhos per centimeter  
*Sodicity (SAR):* 46 to 60

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 4 to 6 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Medium  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.10; T value—5; wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* Low

**Characteristics of the Orovada Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Inset fans  
*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium  
*Slope:* 2 to 4 percent  
*Elevation:* 6,000 to 6,500 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

**Typical Profile**

*Depth:* 0 to 8 inches  
*Texture:* Gravelly very fine sandy loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 7

*Depth:* 8 to 20 inches  
*Texture:* Fine sandy loam, loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 20 to 65 inches  
*Texture:* Stratified fine sandy loam to silt loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 8 to 10 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.37; T value—5; wind erodibility group—4  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

**Characteristics of the Broyles Soil**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Fan skirts, inset fan remnants  
*Parent material:* Thin loess mantle over mixed alluvium  
*Slope:* 2 to 8 percent  
*Elevation:* 6,000 to 6,400 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bluegrass

**Typical Profile**

*Depth:* 0 to 13 inches

*Texture:* Gravelly very fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

*Depth:* 13 to 60 inches

*Texture:* Stratified loam to gravelly loamy sand

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately rapid

*Available water capacity:* 6.2 to 7.4 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.32; T value—5; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—moderate

*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* Fan aprons

*Distinctive present vegetation:* Bottlebrush squirreltail, black sagebrush

##### **Inclusion 2**

*Classification:* Durixerollic Camborthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* The highest part of fan aprons and inset fans near channels

*Distinctive present vegetation:* Wyoming big sagebrush

##### **Inclusion 3**

*Classification:* Haplic Durargids, loamy, mixed, mesic, shallow

*Positions on landscape:* Convex, highest part of fan piedmont remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Ricert Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

##### **Orovada Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

##### **Broyles Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Suitability and Limitations for Selected Uses**

##### **Ricert Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim, excess sodium

*Daily cover for landfill:* Poor—seepage, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage, excess sodium

*Sand:* Probable source

*Gravel:* Probable source

##### **Orovada Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

##### **Broyles Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium

*Roadfill:* Good

*Topsoil:* Poor—small stones

*Daily cover for landfill:* Fair—too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—piping, excess salt

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Ricert soil—IVs, irrigated,

and VIIc, nonirrigated; Orovada soil—Ile, irrigated, and VIc, nonirrigated; Broyles soil—IIle, irrigated, and VIIc, nonirrigated

*Range site:* Ricert and Broyles soils—024X002N; Orovada soil—028B010N; Inclusion 1—024X030N; Inclusion 2—028B010N; Inclusion 3—024X002N

### **1288—Ricert-Orovada-Tenabo association**

*Positions on landscape:* Fan piedmonts

#### **Composition**

*Major components:*

Ricert gravelly fine sandy loam, 2 to 8 percent slopes—40 percent

Orovada fine sandy loam, 2 to 8 percent slopes—30 percent

Tenabo very fine sandy loam, 2 to 4 percent slopes—15 percent

*Contrasting inclusions:*

Durixerollic Haplargids, fine-loamy, mixed, mesic, 2 to 8 percent slopes—6 percent

Duric Camborthids, loamy-skeletal, mixed, mesic, 8 to 15 percent slopes—6 percent

Duric Natrargids, fine, montmorillonitic, mesic, 2 to 4 percent slopes—3 percent

#### **Characteristics of the Ricert Soil**

*Classification:* Duric Natrargids, fine-loamy, mixed, mesic

*Positions on landscape:* The lower summits of fan piedmont remnants

*Parent material:* Thin loess deposits over mixed alluvium

*Slope:* 2 to 8 percent

*Elevation:* 5,700 to 6,100 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bluegrass

#### **Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 6 to 18 inches

*Texture:* Loam, clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Strongly alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

*Depth:* 18 to 60 inches

*Texture:* Very gravelly sandy loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 4 to 6 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.20; T value—5; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

#### **Characteristics of the Orovada Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Inset fans

*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 2 to 8 percent

*Elevation:* 5,700 to 6,100 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

#### **Typical Profile**

*Depth:* 0 to 8 inches

*Texture:* Fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 8 to 20 inches

*Texture:* Fine sandy loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 20 to 65 inches

*Texture:* Stratified fine sandy loam to silt loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 8.0 to 9.6 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Tenabo Soil**

*Classification:* Typic Nadurargids, loamy, mixed, mesic, shallow

*Positions on landscape:* The higher summits of fan piedmont remnants

*Parent material:* Thin loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 5,700 to 6,100 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass

#### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Very fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 5 to 10

*Depth:* 4 to 15 inches

*Texture:* Clay loam, gravelly clay loam, silty clay loam

*Structure:* Prismatic

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

*Depth:* 15 to 28 inches

*Material:* Indurated hardpan

*Structure:* Platy

*Consistence:* Extremely hard, extremely firm

*Depth:* 28 to 60 inches

*Texture:* Stratified very gravelly sandy loam to extremely gravelly coarse sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Strongly alkaline

*Salinity:* 4 to 16 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

#### **Soil and Water Features**

*Depth to the hardpan:* 9 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 2.8 to 3.2 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.55; T value—1; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—moderate

*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* Fan drainageways

*Distinctive present vegetation:* Wyoming big sagebrush, spiny hopsage

##### **Inclusion 2**

*Classification:* Duric Camborthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Side slopes of fan piedmont remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush

##### **Inclusion 3**

*Classification:* Duric Natrargids, fine, montmorillonitic, mesic

*Positions on landscape:* The upper part of shoulder slopes of fan piedmont remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Ricert Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

**Orovada Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Tenabo Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

**Suitability and Limitations for Selected Uses****Ricert Soil**

*Range seeding:* Poor—too arid, excess sodium

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim, excess sodium

*Daily cover for landfill:* Poor—seepage, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage, excess sodium

*Sand:* Probable source

*Gravel:* Probable source

**Orovada Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Fair—small stones, thin layer

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Tenabo Soil**

*Range seeding:* Poor—too arid, excess sodium

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—cemented pan, small stones, too sandy

*Daily cover for landfill:* Poor—cemented pan, seepage, too sandy

*Shallow excavations:* Severe—cemented pan, cutbanks cave

*Local roads and streets:* Severe—cemented pan

*Pond reservoir areas:* Severe—seepage, cemented pan

*Embankments, dikes, and levees:* Severe—seepage, excess sodium, excess salt

*Sand:* Probable source

*Gravel:* Probable source

**Interpretive Groups**

*Land capability classification:* Ricert and Tenabo soils—IVe, irrigated, and VIIs, nonirrigated; Orovada soil—IIIe, irrigated, and VIc, nonirrigated

*Range site:* Ricert and Tenabo soils—024X002N;

Orovada soil—028B010N; Inclusion 1—024X020N;

Inclusions 2 and 3—024X002N

**1289—Ricert-Blackhawk-Orovada association**

*Positions on landscape:* Fan piedmonts

**Composition**

*Major components:*

Ricert gravelly fine sandy loam, 4 to 15 percent slopes—40 percent

Blackhawk very fine sandy loam, 2 to 4 percent slopes—25 percent

Orovada fine sandy loam, 2 to 8 percent slopes—20 percent

*Contrasting inclusions:*

Duric Camborthids, loamy-skeletal, mixed, mesic, 8 to 30 percent slopes—9 percent

Xerollic Camborthids, loamy-skeletal, mixed, mesic, 2 to 4 percent slopes—3 percent

Duric Camborthids, fine-loamy, mixed, mesic, 8 to 30 percent slopes—2 percent

Aquic Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 0 to 2 percent slopes—1 percent

**Characteristics of the Ricert Soil**

*Classification:* Duric Natrargids, fine-loamy, mixed, mesic

*Positions on landscape:* Shoulder slopes and side slopes of fan piedmont remnants

*Parent material:* Thin loess deposits over mixed alluvium

*Slope:* 0 to 8 percent

*Elevation:* 5,800 to 6,200 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bluegrass

**Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 6 to 18 inches

*Texture:* Loam, clay loam  
*Structure:* Prismatic  
*Consistence:* Hard, firm  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46

*Depth:* 18 to 60 inches  
*Texture:* Very gravelly sandy loam  
*Structure:* Massive  
*Consistence:* Soft, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 8 millimhos per centimeter  
*Sodicity (SAR):* 46 to 60

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 4 to 6 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.20; T value—5; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

#### **Characteristics of the Blackhawk Soil**

*Classification:* Entic Durorthids, loamy, mixed, mesic, shallow

*Positions on landscape:* Summits of fan piedmont remnants

*Parent material:* Loess over mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 5,800 to 6,200 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

#### **Typical Profile**

*Depth:* 0 to 3 inches

*Texture:* Very fine sandy loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 3 to 14 inches

*Texture:* Loam, very fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 14 to 30 inches

*Material:* Cemented hardpan

*Structure:* Massive

*Consistence:* Extremely hard, extremely firm

*Depth:* 30 to 48 inches

*Texture:* Loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Very strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

*Depth:* 48 to 60

*Texture:* Stratified very gravelly sandy loam to extremely gravelly coarse sand

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

#### **Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 2.2 to 2.7 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.43; T value—1; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

#### **Characteristics of the Orovada Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Inset fans, fan drainageways

*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 2 to 8 percent

*Elevation:* 5,800 to 6,200 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

#### **Typical Profile**

*Depth:* 0 to 8 inches

*Texture:* Fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 8 to 20 inches

*Texture:* Fine sandy loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 20 to 65 inches

*Texture:* Stratified fine sandy loam to silt loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 8.4 to 9.6 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Duric Camborthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* South-facing, eroded side slopes of fan piedmont remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush

##### **Inclusion 2**

*Classification:* Xerollic Camborthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* The lower inset fans

*Distinctive present vegetation:* Needlegrass, Wyoming big sagebrush

##### **Inclusion 3**

*Classification:* Duric Camborthids, fine-loamy, mixed, mesic

*Positions on landscape:* Eroded scarps along the southeastern edge of fan piedmont remnants

*Distinctive present vegetation:* Shadscale, black greasewood

##### **Inclusion 4**

*Classification:* Aquic Torriorthents, loamy-skeletal, mixed (calcareous), mesic

*Positions on landscape:* Fan skirts

*Distinctive present vegetation:* Basin big sagebrush, basin wildrye, black greasewood

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Ricert Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

##### **Blackhawk Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

##### **Orovada Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

##### **Ricert Soil**

*Range seeding:* Poor—too arid, excess sodium

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim, excess sodium

*Daily cover for landfill:* Poor—seepage, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage, excess sodium

*Sand:* Probable source

*Gravel:* Probable source

##### **Blackhawk Soil**

*Range seeding:* Poor—too arid, droughty

*Roadfill:* Good

*Topsoil:* Poor—cemented pan, area reclaim

*Daily cover for landfill:* Poor—cemented pan

*Shallow excavations:* Severe—cemented pan, cutbanks cave

*Local roads and streets:* Moderate—cemented pan

*Pond reservoir areas:* Severe—seepage, cemented pan



*Embankments, dikes, and levees:* Severe—seepage, excess salt

*Sand:* Probable source

*Gravel:* Probable source

#### **Orovada Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Fair—small stones, thin layer

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Ricert soil—VII<sub>s</sub>, nonirrigated; Blackhawk soil—IV<sub>e</sub>, irrigated, and VII<sub>s</sub>, nonirrigated; Orovada soil—III<sub>e</sub>, irrigated, and VI<sub>c</sub>, nonirrigated

*Range site:* Ricert and Blackhawk soils—024X002N; Orovada soil—028B010N; Inclusion 1—024X002N; Inclusion 2—028B010N; Inclusion 3—024X003N; Inclusion 4—024X006N

### **1371—Chad-Gando-Softscrabble association**

*Positions on landscape:* Mountains

#### **Composition**

*Major components:*

Chad cobbly loam, 15 to 50 percent slopes—45 percent  
Gando very gravelly loam, 15 to 30 percent slopes—20 percent

Softscrabble fine sandy loam, 15 to 30 percent slopes—20 percent

*Contrasting inclusions:*

Walti loam, 8 to 30 percent slopes—5 percent

Rock outcrop—5 percent

Welch loam, drained, 4 to 8 percent slopes—3 percent

Welch loam, 4 to 8 percent slopes—2 percent

#### **Characteristics of the Chad Soil**

*Classification:* Aridic Argixerolls, fine, mixed, frigid

*Positions on landscape:* Convex side slopes of mountains

*Parent material:* Residuum derived from chert and shale

*Slope:* 15 to 50 percent

*Elevation:* 6,200 to 7,800 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Bluebunch wheatgrass, Thurber needlegrass, mountain big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 20 percent cobbles, 10 percent pebbles

*Depth:* 0 to 17 inches

*Texture:* Cobbly loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 17 to 42 inches

*Texture:* Gravelly clay, clay

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 42 inches

*Material:* Weathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 40 to 60 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 4.6 to 5.9 inches

*Water-supplying capacity:* 13 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.28; T value—3; wind erodibility group—6

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

#### **Characteristics of the Gando Soil**

*Classification:* Lithic Haploxerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Mountain crests

*Parent material:* Residuum derived from mixed sedimentary rock

*Slope:* 15 to 30 percent

*Elevation:* 6,800 to 7,800 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Bluegrass, Idaho fescue, low sagebrush, black sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 2 percent stones and boulders, 10 percent cobbles, 20 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Very gravelly loam

*Structure:* Granular

*Consistence:* Soft, very friable

*Reaction:* Mildly alkaline

*Depth:* 4 to 10 inches

*Texture:* Very gravelly loam, extremely gravelly loam

*Structure:* Granular

*Consistence:* Soft, very friable

*Reaction:* Mildly alkaline

*Depth:* 10 inches

*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 1.2 to 1.4 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—1; wind erodibility group—7

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Softscrabble Soil**

*Classification:* Pachic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Concave mountain side slopes

*Parent material:* Colluvium and residuum derived from volcanic rock

*Slope:* 15 to 30 percent

*Elevation:* 6,200 to 7,800 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 70 days

*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

#### **Typical Profile**

*Rock fragments on surface:* 2 percent stones and boulders, 10 percent pebbles

*Depth:* 0 to 14 inches

*Texture:* Fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 14 to 27 inches

*Texture:* Very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 27 to 60 inches

*Texture:* Very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 6.2 to 7.4 inches

*Water-supplying capacity:* 14 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.28; T value—5; wind erodibility group—3

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Aridic Argixerolls, fine, montmorillonitic, frigid

*Positions on landscape:* Mountain shoulder slopes

*Distinctive present vegetation:* Idaho fescue, low sagebrush

##### **Inclusion 2**

*Positions on landscape:* Scattered peaks

*Distinctive present vegetation:* None

##### **Inclusion 3**

*Classification:* Cumulic Haplaquolls, fine-loamy, mixed, frigid

*Positions on landscape:* Adjacent to entrenched narrow mountain drainageways

*Distinctive present vegetation:* Basin big sagebrush, basin wildrye, bluegrass

##### **Inclusion 4**

*Classification:* Cumulic Haplaquolls, fine-loamy, mixed, frigid

*Positions on landscape:* Adjacent to narrow mountain drainageways

*Distinctive present vegetation:* Tufted hairgrass, iris, sedge, willow

#### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Chad Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Gando Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Softscrabble Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Chad Soil**

*Range seeding:* Fair—large stones, erodes easily

*Roadfill:* Poor—slope, shrink-swell

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—too clayey, hard to pack, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope, shrink-swell

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—hard to pack

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Gando Soil**

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Softscrabble Soil**

*Range seeding:* Good

*Roadfill:* Fair—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—large stones, seepage

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Chad soil—VIIe, nonirrigated; Gando soil—VIIc, nonirrigated; Softscrabble soil—VIe, nonirrigated

*Range site:* Chad soil—024X029N; Gando soil—028B034N; Softscrabble soil—028B030N; Inclusion 1—028B037N; Inclusion 2—none; Inclusion 3—028B034N; Inclusion 4—025X005N

### **1450—Atlow-Stingdorn association**

*Positions on landscape:* Foothills

### **Composition**

*Major components:*

Atlow very gravelly loam, 15 to 50 percent slopes—45 percent

Atlow very gravelly loam, 8 to 15 percent slopes—20 percent

Stingdorn cobbly loam, 15 to 30 percent slopes—20 percent

*Contrasting inclusions:*

Colbar gravelly loam, 15 to 30 percent slopes—5 percent

Xerollic Durorthids, loamy-skeletal, mixed, mesic, 15 to 30 percent slopes—5 percent

Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 4 to 15 percent slopes—5 percent

### **Characteristics of the Atlow Soil, Steep**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Convex, north- and east-facing side slopes of foothills

*Parent material:* Residuum derived from chert, argillite, shale, and altered tuff

*Slope:* 15 to 50 percent

*Elevation:* 5,200 to 6,100 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 46 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Black sagebrush, bluegrass, Indian ricegrass

### **Typical Profile**

*Rock fragments on surface:* 40 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 3 to 14 inches

*Texture:* Very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 14 inches

*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.1 to 1.3 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—7

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Atlow Soil, Strongly Sloping**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Crests and shoulder slopes of foothills

*Parent material:* Residuum derived from chert, argillite, shale, and altered tuff

*Slope:* 8 to 15 percent

*Elevation:* 5,500 to 6,100 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 46 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Black sagebrush, bluegrass, Indian ricegrass

### **Typical Profile**

*Rock fragments on surface:* 40 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 3 to 14 inches

*Texture:* Very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 14 inches

*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.1 to 1.3 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—7

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Stingdorn Soil**

*Classification:* Typic Durargids, loamy-skeletal, mixed, mesic, shallow

*Positions on landscape:* The lower, south-facing side slopes of foothills

*Parent material:* Residuum derived from rhyolite, tuff, and andesite

*Slope:* 15 to 30 percent

*Elevation:* 5,200 to 6,100 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bottlebrush squirreltail, shadscale, bud sagebrush

### **Typical Profile**

*Rock fragments on surface:* 20 percent cobbles, 10 percent pebbles

*Depth:* 0 to 7 inches

*Texture:* Cobbly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 7 to 15 inches

*Texture:* Very cobbly clay loam

*Structure:* Angular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 15 to 20 inches

*Material:* Indurated hardpan

*Depth:* 20 inches

*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to the hardpan:* 8 to 20 inches

*Depth to bedrock:* 8 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.7 to 2.2 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.20; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Xerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* Concave, north-facing side slopes of foothills

*Distinctive present vegetation:* Thurber needlegrass, Wyoming big sagebrush

#### **Inclusion 2**

*Classification:* Xerollic Durorthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* The higher, south-facing side slopes of foothills

*Distinctive present vegetation:* Black sagebrush

#### **Inclusion 3**

*Classification:* Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Spiny hopsage, Wyoming big sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Atlow Soil, Steep**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Atlow Soil, Strongly Sloping**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Stingdorn Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

### **Suitability and Limitations for Selected Uses**

#### **Atlow Soil, Steep**

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Atlow Soil, Strongly Sloping**

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones

*Daily cover for landfill:* Poor—depth to rock, small stones

*Shallow excavations:* Severe—depth to rock

*Local roads and streets:* Severe—depth to rock

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Stingdorn Soil**

*Range seeding:* Poor—droughty, too arid

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, cemented pan, large stones

*Daily cover for landfill:* Poor—depth to rock, large stones, slope

*Shallow excavations:* Severe—depth to rock, cemented pan, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, cemented pan, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Atlow and Stingdorn soils—VIIIs, nonirrigated

*Range site:* Atlow soils—024X030N; Stingdorn soil—024X002N; Inclusion 1—024X005N; Inclusion 2—024X030N; Inclusion 3—024X020N

## **1600—Dumps and pits**

### **Characteristics of the Dumps and Pits**

*Positions on landscape:* Side slopes of hills and adjacent fan piedmonts

*Description of areas:* Pits and spoil from mining operations

*Kind of material:* Mixed fill material, residuum

*Elevation:* 5,200 to 7,900 feet

*Depth to a seasonal high water table:* More than 60 inches

### ***Interpretive Groups***

*Land capability classification:* VIIIs, nonirrigated

*Range site:* None

## **1670—Wieland-Allor association**

*Positions on landscape:* Fan piedmonts

### ***Composition***

*Major components:*

Wieland loam, 2 to 8 percent slopes—70 percent

Allor very cobbly loam, 15 to 30 percent slopes—15 percent

*Contrasting inclusions:*

Orovada fine sandy loam, 2 to 4 percent slopes—7 percent

Xerollic Haplargids, fine-loamy, mixed, mesic, 2 to 8 percent slopes—5 percent

Durixerollic Camborthids, coarse-loamy, mixed, mesic, 2 to 8 percent slopes—3 percent

### ***Characteristics of the Wieland Soil***

*Classification:* Durixerollic Haplargids, fine, montmorillonitic, mesic

*Positions on landscape:* Summits of slightly dissected fan piedmont remnants

*Parent material:* Mixed alluvium that includes loess and volcanic ash

*Slope:* 2 to 8 percent

*Elevation:* 5,800 to 6,200 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Indian ricegrass, needlegrass, Wyoming big sagebrush

### ***Typical Profile***

*Rock fragments on surface:* 20 percent pebbles

*Depth:* 0 to 8 inches

*Texture:* Loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Mildly alkaline

*Depth:* 8 to 20 inches

*Texture:* Gravelly clay

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Moderately alkaline

*Depth:* 20 to 60 inches

*Texture:* Gravelly loam, gravelly sandy loam

*Structure:* Massive

*Consistence:* Hard, firm

*Reaction:* Moderately alkaline

### ***Soil and Water Features***

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 6 to 8 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Medium

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.49; T value—5; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### ***Characteristics of the Allor Soil***

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* Side slopes of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 15 to 30 percent

*Elevation:* 5,800 to 6,200 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

### ***Typical Profile***

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 12 inches

*Texture:* Very cobbly loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 12 to 34 inches

*Texture:* Gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 34 to 60 inches

*Texture:* Gravelly loamy sand, very gravelly loamy sand

*Structure:* Massive

*Consistence:* Very hard, firm

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 4.7 to 6.0 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.10; T value—5; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

**Contrasting Inclusions****Inclusion 1**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Wyoming big sagebrush

**Inclusion 2**

*Classification:* Xerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* Narrow inset fans near the base of adjacent hills

*Distinctive present vegetation:* Basin big sagebrush, bluegrass

**Inclusion 3**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Shoulder slopes of fan piedmont remnants

*Distinctive present vegetation:* Wyoming big sagebrush, spiny hopsage

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Wieland Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Allor Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses****Wieland Soil**

*Range seeding:* Poor—rooting depth

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Moderate—too clayey

*Local roads and streets:* Severe—low strength, shrink-swell

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Moderate—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Allor Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Fair—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—cutbanks cave, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Wieland soil—IIIe, irrigated, and VIs, nonirrigated; Allor soil—VIIIs, nonirrigated

*Range site:* Wieland and Allor soils—024X005N; Inclusion 1—024X005N; Inclusion 2—025X003N; Inclusion 3—024X020N

**1680—Zineb gravelly loam, 2 to 8 percent slopes**

*Positions on landscape:* Fan skirts

**Composition**

*Major component:*

Zineb gravelly loam, 2 to 8 percent slopes—85 percent

*Contrasting inclusions:*

Whirlo gravelly very fine sandy loam, 2 to 8 percent slopes—10 percent

Xerollic Camborthids, loamy-skeletal, mixed, mesic, 0 to 4 percent slopes—5 percent

**Characteristics of the Zineb Soil**

*Classification:* Durixerollic Camborthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Fan skirts

*Parent material:* Mixed alluvium that includes volcanic ash

*Slope:* 2 to 8 percent

*Elevation:* 5,200 to 5,800 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, Indian ricegrass, Wyoming big sagebrush

**Typical Profile**

*Rock fragments on surface:* 20 percent pebbles

*Depth:* 0 to 6 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 13 inches

*Texture:* Gravelly loam, gravelly very fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 13 to 19 inches

*Texture:* Very gravelly sandy loam, very gravelly loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 19 to 27 inches

*Texture:* Extremely cobbly sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 27 to 60

*Texture:* Extremely cobbly coarse sand, extremely cobbly loamy coarse sand

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate over rapid

*Available water capacity:* 2.0 to 3.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.32; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

**Contrasting Inclusions****Inclusion 1**

*Classification:* Typic Camborthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* The lower areas of fan skirts

*Distinctive present vegetation:* Shadscale, bud sagebrush

**Inclusion 2**

*Classification:* Xerollic Camborthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Wyoming big sagebrush

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses**

*Range seeding:* Poor—droughty

*Roadfill:* Fair—large stones

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—frost action, large stones

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—large stones

*Gravel:* Improbable source—large stones

**Interpretive Groups**

*Land capability classification:* Zineb soil—IVe, irrigated, and VIIs, nonirrigated

*Range site:* Zineb soil—024X005N; Inclusion 1—024X002N; Inclusion 2—024X005N

**1681—Zineb-Chiara-Wieland association**

*Positions on landscape:* Fan piedmonts, fan skirts

**Composition**

*Major components:*

Zineb gravelly loam, 2 to 4 percent slopes—35 percent

Chiara gravelly loam, 2 to 8 percent slopes—35 percent

Wieland gravelly loam, 2 to 4 percent slopes—20 percent

*Contrasting inclusions:*

Cumulic Haploxerolls, fine-loamy, mixed, mesic, 0 to 2 percent slopes—5 percent



Xerollic Camborthids, coarse-loamy, mixed, mesic, 2 to 4 percent slopes—5 percent

### **Characteristics of the Zineb Soil**

*Classification:* Durixerollic Camborthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Fan skirts

*Parent material:* Mixed alluvium that includes volcanic ash

*Slope:* 2 to 4 percent

*Elevation:* 5,500 to 6,500 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, Indian ricegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 20 percent pebbles

*Depth:* 0 to 6 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 13 inches

*Texture:* Gravelly loam, gravelly very fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 13 to 19 inches

*Texture:* Very gravelly sandy loam, very gravelly loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 19 to 27 inches

*Texture:* Extremely cobbly sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 27 to 60

*Texture:* Extremely cobbly coarse sand, extremely cobbly loamy coarse sand

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate over rapid

*Available water capacity:* 2.0 to 3.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.32; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Chiara Soil**

*Classification:* Xerollic Durorthids, loamy, mixed, mesic, shallow

*Positions on landscape:* The higher summits of fan piedmont remnants

*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 2 to 8 percent

*Elevation:* 5,500 to 6,500 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

### **Typical Profile**

*Depth:* 0 to 4 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 4 to 13 inches

*Texture:* Silt loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 13 inches

*Material:* Indurated hardpan

*Structure:* Massive

*Consistence:* Extremely hard, extremely firm

**Soil and Water Features**

*Depth to the hardpan:* 10 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 2.3 to 2.7 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.20; T value—1; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

**Characteristics of the Wieland Soil**

*Classification:* Durixerollic Haplargids, fine, montmorillonitic, mesic  
*Positions on landscape:* The lower summits of fan piedmont remnants  
*Parent material:* Mixed alluvium that includes loess and volcanic ash  
*Slope:* 2 to 4 percent  
*Elevation:* 5,500 to 6,500 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Indian ricegrass, needlegrass, Wyoming big sagebrush

**Typical Profile**

*Rock fragments on surface:* 20 percent pebbles  
*Depth:* 0 to 5 inches  
*Texture:* Gravelly loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 5 to 26 inches  
*Texture:* Gravelly clay, clay  
*Structure:* Prismatic  
*Consistence:* Hard, firm  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 26 to 52 inches  
*Texture:* Gravelly clay loam, gravelly sandy clay loam  
*Structure:* Massive  
*Consistence:* Hard, firm  
*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 52 to 60 inches  
*Texture:* Gravelly loam, gravelly sandy loam  
*Structure:* Massive  
*Consistence:* Hard, firm  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 5.5 to 9.0 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Medium  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.32; T value—5; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* High  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

**Contrasting Inclusions****Inclusion 1**

*Classification:* Cumulic Haploxerolls, fine-loamy, mixed, mesic  
*Positions on landscape:* The upper inset fans  
*Distinctive present vegetation:* Basin big sagebrush, basin wildrye

**Inclusion 2**

*Classification:* Xerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* The lower inset fans  
*Distinctive present vegetation:* Wyoming big sagebrush, spiny hopsage

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Zineb Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

**Chlara Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

**Wieland Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

### ***Suitability and Limitations for Selected Uses***

#### **Zineb Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Fair—large stones

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—frost action, large stones

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—large stones

*Gravel:* Improbable source—large stones

#### **Chiara Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—cemented pan

*Daily cover for landfill:* Poor—cemented pan

*Shallow excavations:* Severe—cemented pan

*Local roads and streets:* Severe—cemented pan

*Pond reservoir areas:* Severe—cemented pan

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Wieland Soil**

*Range seeding:* Poor—rooting depth

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Moderate—too clayey

*Local roads and streets:* Severe—low strength, shrink-swell

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Moderate—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### ***Interpretive Groups***

*Land capability classification:* Zineb and Chiara soils—  
I<sub>Ve</sub>, irrigated, and VII<sub>s</sub>, nonirrigated; Wieland soil—  
II<sub>e</sub>, irrigated, and VI<sub>s</sub>, nonirrigated

*Range site:* Zineb, Chiara, and Wieland soils—  
024X005N; Inclusion 1—025X003N; Inclusion 2—  
024X020N

### **1682—Zineb-Orovada association**

*Positions on landscape:* Piedmont slopes

#### ***Composition***

*Major components:*

Zineb very gravelly sandy loam, 2 to 4 percent slopes—  
55 percent

Orovada gravelly fine sandy loam, 2 to 4 percent  
slopes—30 percent

*Contrasting inclusions:*

Durixerollic Camborthids, coarse-loamy, mixed, mesic, 0  
to 2 percent slopes—8 percent

Pineval gravelly loam, 0 to 2 percent slopes—4 percent

Orovada very gravelly sandy loam, 4 to 8 percent  
slopes—3 percent

### ***Characteristics of the Zineb Soil***

*Classification:* Durixerollic Camborthids, loamy-skeletal,  
mixed, mesic

*Positions on landscape:* Inset fans and fan skirts near  
fan drainageways

*Parent material:* Mixed alluvium that includes volcanic  
ash

*Slope:* 2 to 4 percent

*Elevation:* 5,700 to 5,900 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, Indian  
ricegrass, Wyoming big sagebrush

#### ***Typical Profile***

*Rock fragments on surface:* 20 percent pebbles

*Depth:* 0 to 6 inches

*Texture:* Very gravelly sandy loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 13 inches

*Texture:* Gravelly loam, gravelly very fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 13 to 19 inches

*Texture:* Very gravelly sandy loam, very gravelly loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 19 to 27 inches

*Texture:* Extremely cobbly sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 27 to 60 inches

*Texture:* Extremely cobbly coarse sand, extremely cobbly loamy coarse sand

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate over rapid

*Available water capacity:* 2.0 to 3.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.10; T value—5; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Orovada Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Summits of fan skirts

*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 5,700 to 5,900 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

#### **Typical Profile**

*Depth:* 0 to 8 inches

*Texture:* Gravelly fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 8 to 20 inches

*Texture:* Fine sandy loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 20 to 65 inches

*Texture:* Stratified fine sandy loam to silt loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 8.2 to 9.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.28; T value—5; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Narrow inset fans near the front of mountains

*Distinctive present vegetation:* Basin big sagebrush, rubber rabbitbrush, basin wildrye

##### **Inclusion 2**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Nonburied fan piedmont remnants

*Distinctive present vegetation:* Wyoming big sagebrush

##### **Inclusion 3**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Fan aprons closest to the front of mountains

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Zineb Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Orovada Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses****Zineb Soil**

*Range seeding:* Poor—small stones, droughty

*Roadfill:* Fair—large stones

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—frost action, large stones

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—large stones

*Gravel:* Improbable source—large stones

**Orovada Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Zineb soil—VII<sub>s</sub>, nonirrigated; Orovada soil—I<sub>le</sub>, irrigated, and VI<sub>c</sub>, nonirrigated

*Range site:* Zineb and Orovada soils—028B010N; Inclusion 1—028B003N; Inclusions 2 and 3—028B010N

**2003—Unius-Orovada association**

*Positions on landscape:* Fan piedmonts

**Composition**

*Major components:*

Unius gravelly silt loam, 2 to 8 percent slopes—70 percent

Orovada fine sandy loam, 2 to 8 percent slopes—15 percent

*Contrasting inclusions:*

Xerollic Haplargids, fine-loamy, mixed, mesic, 2 to 4 percent slopes—9 percent

Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic, flooded, 0 to 4 percent slopes—3 percent

Haploxerollic Nadurargids, fine, montmorillonitic, mesic, 2 to 8 percent slopes—3 percent

**Characteristics of the Unius Soil**

*Classification:* Haploxerollic Durorthids, loamy, mixed, mesic, shallow

*Positions on landscape:* Summits of fan piedmont remnants

*Parent material:* Mixed alluvium that includes loess and volcanic ash

*Slope:* 2 to 8 percent

*Elevation:* 6,700 to 7,100 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Indian ricegrass, needlegrass, black sagebrush

**Typical Profile**

*Rock fragments on surface:* 50 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Gravelly silt loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 4 to 12 inches

*Texture:* Silt loam, loam, gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 12 to 44 inches

*Material:* Cemented hardpan

*Structure:* Massive

*Consistence:* Very hard, very firm

*Depth:* 44 to 60 inches

*Texture:* Gravelly loamy sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

**Soil and Water Features**

*Depth to the hardpan:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 1.8 to 2.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.28; T value—1;  
wind erodibility group—7

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Orovada Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Inset fans

*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 2 to 8 percent

*Elevation:* 6,700 to 7,100 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

### **Typical Profile**

*Depth:* 0 to 8 inches

*Texture:* Fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 8 to 26 inches

*Texture:* Fine sandy loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 26 to 61 inches

*Texture:* Stratified fine sandy loam to silt loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 2 to 5

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Rare

*Permeability:* Moderate

*Available water capacity:* 9 to 11 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.43; T value—5;  
wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Xerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* Side slopes of fan piedmont remnants

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Inclusion 2**

*Classification:* Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic

*Positions on landscape:* Active inset fans, adjacent to channels

*Distinctive present vegetation:* Basin big sagebrush

#### **Inclusion 3**

*Classification:* Haploxerollic Nadurargids, fine, montmorillonitic, mesic

*Positions on landscape:* Nonburied fan piedmont remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Unius Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Orovada Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Unius Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—cemented pan, small stones

*Daily cover for landfill:* Poor—cemented pan

*Shallow excavations:* Severe—cemented pan, cutbanks cave

*Local roads and streets:* Severe—cemented pan

*Pond reservoir areas:* Severe—cemented pan, seepage

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Orovada Soil***Range seeding:* Fair—too arid*Roadfill:* Good*Topsoil:* Fair—small stones, thin layer*Daily cover for landfill:* Good*Shallow excavations:* Slight*Local roads and streets:* Moderate—frost action, flooding*Pond reservoir areas:* Moderate—seepage, slope*Embankments, dikes, and levees:* Severe—piping*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines**Interpretive Groups***Land capability classification:* Unius soil—VIIIs, nonirrigated; Orovada soil—IIIe, irrigated, and VIc, nonirrigated*Range site:* Unius soil—028B011N; Orovada soil—028B010N; Inclusion 1—028B010N; Inclusion 2—028B009N; Inclusion 3—028B017N**2010—Glyphs-Silverado association***Positions on landscape:* Fan piedmonts**Composition***Major components:*

Glyphs fine sandy loam, 2 to 4 percent slopes—55 percent

Silverado gravelly sandy loam, 2 to 8 percent slopes—30 percent

*Contrasting inclusions:*

Xerollic Camborthids, fine-loamy, mixed, frigid, 2 to 4 percent slopes—7 percent

Muni fine sandy loam, 2 to 4 percent slopes—6 percent

Jesse Camp silt loam, occasionally flooded, 0 to 2 percent slopes—2 percent

**Characteristics of the Glyphs Soil***Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic*Positions on landscape:* Broad, slightly dissected fan piedmont remnants*Parent material:* Mixed alluvium that includes loess and volcanic ash*Slope:* 2 to 4 percent*Elevation:* 6,200 to 6,500 feet*Average annual precipitation:* About 9 inches*Average annual air temperature:* About 47 degrees F*Frost-free season:* About 100 days*Dominant present vegetation:* Indian ricegrass, needleandthread, bluegrass, Wyoming big sagebrush**Typical Profile***Depth:* 0 to 7 inches*Texture:* Fine sandy loam*Structure:* Platy*Consistence:* Slightly hard, friable*Reaction:* Mildly alkaline*Salinity:* 0 to 2 millimhos per centimeter*Sodicity (SAR):* 0 to 2*Depth:* 7 to 17 inches*Texture:* Gravelly clay loam, gravelly sandy clay loam*Structure:* Angular blocky*Consistence:* Slightly hard, friable*Reaction:* Moderately alkaline*Salinity:* 0 to 2 millimhos per centimeter*Sodicity (SAR):* 0 to 2*Depth:* 17 to 37 inches*Texture:* Gravelly sandy loam*Structure:* Massive*Consistence:* Hard, firm*Reaction:* Strongly alkaline*Salinity:* 2 to 4 millimhos per centimeter*Sodicity (SAR):* 2 to 10*Depth:* 37 to 60 inches*Texture:* Very gravelly coarse sand*Structure:* Single grain*Consistence:* Loose*Reaction:* Moderately alkaline*Salinity:* 0 to 4 millimhos per centimeter*Sodicity (SAR):* 2 to 10**Soil and Water Features***Depth to a seasonal high water table:* More than 60 inches*Frequency of flooding:* None*Permeability:* Moderately slow over very rapid*Available water capacity:* 4.8 to 6.7 inches*Water-supplying capacity:* 9 inches*Runoff:* Slow*Hydrologic group:* B*Erosion factors (upper layer):* K value—0.28; T value—3; wind erodibility group—3*Hazard of erosion:* By water—slight; by wind—severe*Shrink-swell potential:* Moderate*Corrosivity:* To steel—high; to concrete—low*Potential for frost action:* Moderate**Characteristics of the Silverado Soil***Classification:* Durixerollic Camborthids, coarse-loamy, mixed, frigid*Positions on landscape:* Inset fan remnants*Parent material:* Mixed alluvium that includes volcanic ash*Slope:* 2 to 8 percent*Elevation:* 6,200 to 6,500 feet*Average annual precipitation:* About 9 inches*Average annual air temperature:* About 44 degrees F*Frost-free season:* About 100 days

*Dominant present vegetation:* Indian ricegrass, needlegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 25 percent pebbles

*Depth:* 0 to 2 inches

*Texture:* Gravelly sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 2 to 19 inches

*Texture:* Sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 19 to 38 inches

*Texture:* Sandy loam, gravelly sandy loam

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 38 to 60 inches

*Texture:* Very gravelly coarse sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately rapid

*Available water capacity:* 4.4 to 5.6 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.15; T value—3; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Xerollic Camborthids, fine-loamy, mixed, frigid

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Wyoming big sagebrush

##### **Inclusion 2**

*Classification:* Haploxerollic Durargids, loamy, mixed, mesic, shallow

*Positions on landscape:* The highest part of fan piedmont remnants

*Distinctive present vegetation:* Wyoming big sagebrush

##### **Inclusion 3**

*Classification:* Xerollic Camborthids, fine-silty, mixed, frigid

*Positions on landscape:* Adjacent to intermittent stream channels

*Distinctive present vegetation:* Basin big sagebrush, basin wildrye

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Glyphs Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

##### **Silverado Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

##### **Glyphs Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

##### **Silverado Soil**

*Range seeding:* Fair—too arid, small stones

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source



### ***Interpretive Groups***

*Land capability classification:* Glyphs soil—IIIe, irrigated, and VIc, nonirrigated; Silverado soil—IVe, irrigated, and VIIc, nonirrigated

*Range site:* Glyphs and Silverado soils—028B010N; Inclusions 1 and 2—028B010N; Inclusion 3—028B009N

## **2011—Glyphs-Muni association**

*Positions on landscape:* Fan piedmonts

### ***Composition***

*Major components:*

Glyphs fine sandy loam, 2 to 8 percent slopes—50 percent

Muni fine sandy loam, 2 to 4 percent slopes—35 percent

*Contrasting inclusions:*

Durixerollic Camborthids, fine-loamy, mixed, mesic, 0 to 4 percent slopes—8 percent

Aquic Argixerolls, fine-loamy, mixed, mesic, 0 to 2 percent slopes—3 percent

Grassval gravelly fine sandy loam, 2 to 4 percent slopes—3 percent

Fluvaquentic Haplaquolls, fine-loamy, mixed, mesic, 0 to 2 percent slopes—1 percent

### ***Characteristics of the Glyphs Soil***

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* Convex side slopes of fan piedmont remnants

*Parent material:* Mixed alluvium that includes loess and volcanic ash

*Slope:* 2 to 8 percent

*Elevation:* 6,300 to 7,000 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Indian ricegrass, needleandthread, bluegrass, Wyoming big sagebrush

### ***Typical Profile***

*Depth:* 0 to 7 inches

*Texture:* Fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 7 to 17 inches

*Texture:* Gravelly clay loam, gravelly sandy clay loam

*Structure:* Angular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 17 to 37 inches

*Texture:* Gravelly sandy loam

*Structure:* Massive

*Consistence:* Hard, firm

*Reaction:* Strongly alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 37 to 60 inches

*Texture:* Very gravelly coarse sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Moderately alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

### ***Soil and Water Features***

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow over moderately rapid

*Available water capacity:* 4.8 to 6.7 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.28; T value—3; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### ***Characteristics of the Muni Soil***

*Classification:* Haploxerollic Durargids, loamy, mixed, mesic, shallow

*Positions on landscape:* Dissected, convex summits and shoulder slopes of fan piedmont remnants

*Parent material:* Mixed alluvium that includes loess and volcanic ash

*Slope:* 2 to 4 percent

*Elevation:* 6,300 to 7,300 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Needlegrass, bluegrass, Wyoming big sagebrush

### ***Typical Profile***

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Fine sandy loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 3 to 18 inches

*Texture:* Sandy clay loam, clay loam, loam

*Structure:* Prismatic

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 18 to 49 inches

*Material:* Cemented hardpan

*Depth:* 49 to 60 inches

*Texture:* Very gravelly loamy sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

#### **Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 2.7 to 3.5 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.32; T value—1; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Durixerollic Camborthids, fine-loamy, mixed, mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Thurber needlegrass, Wyoming big sagebrush

##### **Inclusion 2**

*Classification:* Aquic Argixerolls, fine-loamy, mixed, mesic

*Positions on landscape:* Adjacent to intermittent stream channels

*Distinctive present vegetation:* Basin wildrye, basin big sagebrush

##### **Inclusion 3**

*Classification:* Xerollic Durargids, loamy, mixed, mesic, shallow

*Positions on landscape:* The highest part of fan piedmont remnants

*Distinctive present vegetation:* Indian ricegrass, black sagebrush

##### **Inclusion 4**

*Classification:* Fluvaquent Haplaquolls, fine-loamy, mixed, mesic

*Positions on landscape:* Near springs and intermittent stream channels

*Distinctive present vegetation:* Rush, sedge, bluegrass

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Glyphs Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

##### **Muni Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

##### **Glyphs Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

##### **Muni Soil**

*Range seeding:* Fair—too arid, droughty

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—cemented pan, area reclaim

*Daily cover for landfill:* Poor—cemented pan, small stones

*Shallow excavations:* Severe—cemented pan, cutbanks cave

*Local roads and streets:* Severe—cemented pan

*Pond reservoir areas:* Severe—cemented pan

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Glyphs soil—IIIe, irrigated, and VIc, nonirrigated; Muni soil—IIIe, irrigated, and VIIs, nonirrigated

*Range site:* Glyphs and Muni soils—028B010N; Inclusion 1—028B010N; Inclusion 2—028B003N; Inclusion 3—028B011N; Inclusion 4—028B001N

### **2012—Glyphs-Muni-Orovada association**

*Positions on landscape:* Fan piedmonts

#### **Composition**

*Major components:*

Glyphs fine sandy loam, 2 to 8 percent slopes—40 percent

Muni fine sandy loam, 2 to 4 percent slopes—30 percent

Orovada fine sandy loam, gravelly substratum, 0 to 2 percent slopes—15 percent

*Contrasting inclusions:*

Durixerollic Camborthids, coarse-loamy, mixed, mesic, 4 to 15 percent slopes—9 percent

Durorthidic Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic, 2 to 8 percent slopes—6 percent

#### **Characteristics of the Glyphs Soil**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* The lower part of fan piedmont remnants

*Parent material:* Mixed alluvium that includes loess and volcanic ash

*Slope:* 2 to 8 percent

*Elevation:* 6,300 to 7,000 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Indian ricegrass, needleandthread, bluegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 40 percent pebbles

*Depth:* 0 to 7 inches

*Texture:* Fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 7 to 17 inches

*Texture:* Gravelly clay loam, gravelly sandy clay loam

*Structure:* Angular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 17 to 37 inches

*Texture:* Gravelly sandy loam

*Structure:* Massive

*Consistence:* Hard, firm

*Reaction:* Strongly alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

*Depth:* 37 to 60 inches

*Texture:* Very gravelly coarse sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Moderately alkaline

*Sodicity (SAR):* 2 to 10 millimhos per centimeter

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow over very rapid

*Available water capacity:* 4.8 to 6.7 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.28; T value—3; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Muni Soil**

*Classification:* Haploxerollic Durargids, loamy, mixed, mesic, shallow

*Positions on landscape:* The upper part of fan piedmont remnants

*Parent material:* Mixed alluvium that includes loess and volcanic ash

*Slope:* 2 to 4 percent

*Elevation:* 6,300 to 7,000 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Needlegrass, bluegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Fine sandy loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Neutral  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 3 to 18 inches  
*Texture:* Sandy clay loam, clay loam, loam  
*Structure:* Prismatic  
*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 18 to 49 inches  
*Material:* Cemented hardpan  
*Depth:* 49 to 60 inches  
*Texture:* Very gravelly loamy sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 4 millimhos per centimeter

#### **Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 2.7 to 3.5 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.32; T value—1; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Characteristics of the Orovida Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Inset fans  
*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium  
*Slope:* 0 to 2 percent  
*Elevation:* 6,300 to 7,000 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

#### **Typical Profile**

*Depth:* 0 to 5 inches  
*Texture:* Fine sandy loam

*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 5 to 15 inches  
*Texture:* Fine sandy loam, loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 15 to 40 inches  
*Texture:* Fine sandy loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 40 to 60 inches  
*Texture:* Stratified gravelly sandy loam to very gravelly sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 7 to 9 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.37; T value—5; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* 28 Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Fan aprons  
*Distinctive present vegetation:* Small rabbitbrush, horsebrush

##### **Inclusion 2**

*Classification:* Durorthidic Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic  
*Positions on landscape:* Adjacent to channels  
*Distinctive present vegetation:* Basin big sagebrush, basin wildrye

### Major Current Uses

Livestock grazing, wildlife habitat

### Suitability for Wildlife Habitat Elements

#### Glyphs Soil

Wild herbaceous plants (nonirrigated): Fair

Shrubs (nonirrigated): Fair

#### Muni Soil

Wild herbaceous plants (nonirrigated): Fair

Shrubs (nonirrigated): Fair

#### Orovada Soil

Wild herbaceous plants (nonirrigated): Fair

Shrubs (nonirrigated): Fair

### Suitability and Limitations for Selected Uses

#### Glyphs Soil

Range seeding: Fair—too arid

Roadfill: Good

Topsoil: Poor—small stones, area reclaim

Daily cover for landfill: Poor—seepage, too sandy, small stones

Shallow excavations: Severe—cutbanks cave

Local roads and streets: Moderate—frost action

Pond reservoir areas: Severe—seepage

Embankments, dikes, and levees: Severe—seepage

Sand: Probable source

Gravel: Probable source

#### Muni Soil

Range seeding: Fair—too arid, droughty

Roadfill: Poor—cemented pan

Topsoil: Poor—cemented pan, area reclaim

Daily cover for landfill: Poor—cemented pan, small stones

Shallow excavations: Severe—cemented pan, cutbanks cave

Local roads and streets: Severe—cemented pan

Pond reservoir areas: Severe—cemented pan

Embankments, dikes, and levees: Severe—seepage

Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines

#### Orovada Soil

Range seeding: Fair—too arid

Roadfill: Good

Topsoil: Poor—area reclaim

Daily cover for landfill: Fair—thin layer

Shallow excavations: Severe—cutbanks cave

Local roads and streets: Moderate—frost action

Pond reservoir areas: Moderate—seepage

Embankments, dikes, and levees: Severe—piping

Sand: Probable source

Gravel: Improbable source—too sandy

### Interpretive Groups

*Land capability classification:* Glyphs soil—IIIe, irrigated, and VIc, nonirrigated; Muni soil—IVe, irrigated, and VIIs, nonirrigated; Orovada soil—IIIc, irrigated, and VIc, nonirrigated

*Range site:* Glyphs, Muni, and Orovada soils—028B010N; Inclusion 1—025X025N; Inclusion 2—028B003N

### 2015—Glyphs-Enko association

*Positions on landscape:* Fan piedmonts

### Composition

*Major components:*

Glyphs fine sandy loam, 2 to 4 percent slopes—40 percent

Glyphs fine sandy loam, 15 to 30 percent slopes—25 percent

Enko gravelly loamy sand, 2 to 4 percent slopes—20 percent

*Contrasting inclusions:*

Orovada fine sandy loam, 2 to 8 percent slopes—6 percent

Durixerollic Haplargids, fine, montmorillonitic, mesic, 0 to 2 percent slopes—5 percent

Xerollic Camborthids, coarse-loamy, mixed, mesic, 15 to 30 percent slopes—4 percent

### Characteristics of the Glyphs Soil, Gently Sloping

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* Summits of fan piedmont remnants

*Parent material:* Mixed alluvium that includes loess and volcanic ash

*Slope:* 2 to 4 percent

*Elevation:* 6,000 to 6,500 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Indian ricegrass, needleandthread, bluegrass, Wyoming big sagebrush

### Typical Profile

*Depth:* 0 to 7 inches

*Texture:* Fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 7 to 17 inches  
*Texture:* Gravelly clay loam, gravelly sandy clay loam  
*Structure:* Angular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 17 to 37 inches  
*Texture:* Gravelly sandy loam  
*Structure:* Massive  
*Consistence:* Hard, firm  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 2 to 10

*Depth:* 37 to 60 inches  
*Texture:* Very gravelly coarse sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow over very rapid  
*Available water capacity:* 4.8 to 6.7 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.28; T value—3; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Characteristics of the Glyphs Soil, Moderately Steep**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic  
*Positions on landscape:* The upper side slopes of fan piedmont remnants  
*Parent material:* Mixed alluvium that includes loess and volcanic ash  
*Slope:* 15 to 30 percent  
*Elevation:* 6,000 to 6,200 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 47 degrees F  
*Frost-free season:* About 100 days  
*Dominant present vegetation:* Indian ricegrass, needleandthread, bluegrass, Wyoming big sagebrush

#### **Typical Profile**

*Depth:* 0 to 7 inches  
*Texture:* Fine sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 7 to 17 inches  
*Texture:* Gravelly clay loam, gravelly sandy clay loam  
*Structure:* Angular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 17 to 37 inches  
*Texture:* Gravelly sandy loam  
*Structure:* Massive  
*Consistence:* Hard, firm  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 2 to 10

*Depth:* 37 to 60 inches  
*Texture:* Very gravelly coarse sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow over very rapid  
*Available water capacity:* 4 to 6 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.28; T value—3; wind erodibility group—3  
*Hazard of erosion:* By water—moderate; by wind—severe  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Characteristics of the Enko Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Fan aprons, the higher inset fans

*Parent material:* Mixed alluvium that includes some loess and volcanic ash

*Slope:* 2 to 4 percent

*Elevation:* 5,600 to 6,200 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, Indian ricegrass, bottlebrush squirreltail

### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Gravelly loamy sand

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 4 to 18 inches

*Texture:* Loam, sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 18 to 60 inches

*Texture:* Sandy loam, loam, fine sandy loam

*Structure:* Massive

*Consistence:* Hard, firm

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 6.1 to 8.2 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.20; T value—5; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* The lower inset fans

*Distinctive present vegetation:* Bluegrass, Wyoming big sagebrush

#### **Inclusion 2**

*Classification:* Durixerollic Haplargids, fine, montmorillonitic, mesic

*Positions on landscape:* The upper summits of fan piedmont remnants

*Distinctive present vegetation:* Bluegrass, Wyoming big sagebrush

#### **Inclusion 3**

*Classification:* Xerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* The lower side slopes of fan piedmont remnants

*Distinctive present vegetation:* Needleandthread, Wyoming big sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Glyphs Soil, Gently Sloping**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Glyphs Soil, Moderately Steep**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Enko Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Glyphs Soil, Gently Sloping**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

#### **Glyphs Soil, Moderately Steep**

*Range seeding:* Fair—too arid

*Roadfill:* Fair—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—seepage, slope  
*Embankments, dikes, and levees:* Severe—seepage  
*Sand:* Probable source  
*Gravel:* Probable source

#### **Enko Soil**

*Range seeding:* Fair—too arid  
*Roadfill:* Good  
*Topsoil:* Fair—small stones  
*Daily cover for landfill:* Good  
*Shallow excavations:* Slight  
*Local roads and streets:* Moderate—frost action  
*Pond reservoir areas:* Moderate—slope  
*Embankments, dikes, and levees:* Severe—piping  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Glyphs soil, gently sloping—IIIe, irrigated, and VIc, nonirrigated; Glyphs soil, moderately steep—Vle, nonirrigated; Enko soil—IIe, irrigated, and Vls, nonirrigated  
*Range site:* Glyphs soils—028B010N; Enko soil—024X017N; Inclusions 1 and 2—028B010N; Inclusion 3—028B005N

### **2021—Rotinom-Wholan association**

*Positions on landscape:* Stream terraces, inset fans

#### **Composition**

*Major components:*  
 Rotinom silt loam, 0 to 2 percent slopes—50 percent  
 Wholan very fine sandy loam, 0 to 2 percent slopes—20 percent  
 Wholan very fine sandy loam, alkaline, 0 to 2 percent slopes—15 percent  
*Contrasting inclusions:*  
 Durixerollic Camborthids, fine-loamy, mixed, mesic, gullied, 0 to 4 percent slopes—5 percent  
 Xerollic Camborthids, coarse-loamy, mixed, mesic, gullied, 0 to 4 percent slopes—5 percent  
 Orovada very fine sandy loam, 0 to 4 percent slopes—5 percent

#### **Characteristics of the Rotinom Soil**

*Classification:* Durorthidic Torrifluvents, fine-silty, mixed (calcareous), mesic  
*Positions on landscape:* Stream terraces  
*Parent material:* Loess and mixed alluvium that includes volcanic ash  
*Slope:* 0 to 2 percent  
*Elevation:* 6,400 to 6,700 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 100 days  
*Dominant present vegetation:* Indian ricegrass, shadscale, bud sagebrush

#### **Typical Profile**

*Depth:* 0 to 9 inches  
*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5  
*Depth:* 9 to 60 inches  
*Texture:* Silt loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 5 to 20

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* Occasional for brief periods in November through April  
*Permeability:* Moderately slow  
*Available water capacity:* 10 to 11 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—4L  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Characteristics of the Wholan Soil**

*Classification:* Typic Camborthids, coarse-silty, mixed, mesic  
*Positions on landscape:* The lower parts of inset fans adjacent to stream terraces  
*Parent material:* Loess mantle over silty alluvium  
*Slope:* 0 to 2 percent  
*Elevation:* 6,400 to 6,700 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, bluegrass, winterfat

#### **Typical Profile**

*Depth:* 0 to 6 inches  
*Texture:* Very fine sandy loam  
*Structure:* Platy



*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 60 inches  
*Texture:* Silt loam, very fine sandy loam  
*Structure:* Massive  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* Occasional for very brief periods in December through April  
*Permeability:* Moderate  
*Available water capacity:* 9 to 11 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Characteristics of the Wholan Soil, Alkaline**

*Classification:* Typic Camborthids, coarse-silty, mixed, mesic  
*Positions on landscape:* The higher parts of inset fans adjacent to stream terraces  
*Parent material:* Loess mantle over silty alluvium  
*Slope:* 0 to 2 percent  
*Elevation:* 6,400 to 6,700 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, sickle saltbush

#### **Typical Profile**

*Depth:* 0 to 6 inches  
*Texture:* Very fine sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 6 to 60 inches  
*Texture:* Silt loam, very fine sandy loam  
*Structure:* Massive

*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* Occasional for very brief periods in December through April  
*Permeability:* Moderate  
*Available water capacity:* 9 to 11 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Durixerollic Camborthids, fine-loamy, mixed, mesic  
*Positions on landscape:* Slightly convex stream terraces  
*Distinctive present vegetation:* Wyoming big sagebrush, basin wildrye

##### **Inclusion 2**

*Classification:* Xerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Linear channel banks  
*Distinctive present vegetation:* Basin wildrye, basin big sagebrush

##### **Inclusion 3**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Fan aprons  
*Distinctive present vegetation:* Needleandthread, Wyoming big sagebrush

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Rotinom Soil**

*Wild herbaceous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Poor

##### **Wholan Soil**

*Wild herbaceous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Poor

##### **Wholan Soil, Alkaline**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

### ***Suitability and Limitations for Selected Uses***

#### **Rotinom Soil**

*Range seeding:* Poor—too arid

*Roadfill:* Fair—low strength, shrink-swell

*Topsoil:* Good

*Daily cover for landfill:* Good

*Shallow excavations:* Moderate—flooding

*Local roads and streets:* Severe—flooding

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Wholan Soil**

*Range seeding:* Poor—too arid, excess salt

*Roadfill:* Good

*Topsoil:* Poor—excess salt

*Daily cover for landfill:* Good

*Shallow excavations:* Moderate—flooding

*Local roads and streets:* Severe—flooding

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Wholan Soil, Alkaline**

*Range seeding:* Poor—too arid, excess salt

*Roadfill:* Good

*Topsoil:* Poor—excess salt

*Daily cover for landfill:* Good

*Shallow excavations:* Moderate—flooding

*Local roads and streets:* Severe—flooding

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### ***Interpretive Groups***

*Land capability classification:* Rotinom soil—IIIw, irrigated, and VIIw, nonirrigated; Wholan and Wholan, alkaline, soils—IIw, irrigated, and VIIw, nonirrigated

*Range site:* Rotinom soil—028B017N; Wholan soil—028B013N; Wholan soil, alkaline—024X012N; Inclusion 1—028B003N; Inclusion 2—028B009N; Inclusion 3—028B010N

### **2022—Rotinom-Orovada association**

*Positions on landscape:* Stream terraces, fan skirts

### ***Composition***

*Major components:*

Rotinom silt loam, 0 to 2 percent slopes—50 percent

Orovada very fine sandy loam, rarely flooded, 0 to 2 percent slopes—35 percent

*Contrasting inclusions:*

Orovada gravelly fine sandy loam, gravelly substratum, 0 to 2 percent slopes—5 percent

Rotinom silt loam, frequently flooded, 0 to 4 percent slopes—5 percent

Enko sandy loam, 0 to 2 percent slopes—5 percent

### ***Characteristics of the Rotinom Soil***

*Classification:* Durorthidic Torrifluvents, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Stream terraces

*Parent material:* Loess and mixed alluvium that includes volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 6,200 to 6,700 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Indian ricegrass, shadscale, bud sagebrush

### ***Typical Profile***

*Depth:* 0 to 9 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 9 to 60 inches

*Texture:* Silt loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 5 to 20

### ***Soil and Water Features***

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Occasional for brief periods in November through April

*Permeability:* Moderately slow

*Available water capacity:* 10 to 11 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—4L

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Orovada Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Fan skirts adjacent to stream terraces

*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 0 to 2 percent

*Elevation:* 6,200 to 6,700 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

#### **Typical Profile**

*Depth:* 0 to 8 inches

*Texture:* Very fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 8 to 20 inches

*Texture:* Fine sandy loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 20 to 65 inches

*Texture:* Stratified fine sandy loam to silt loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Rare

*Permeability:* Moderate

*Available water capacity:* 9 to 10 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.49; T value—5; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Fan skirts over gravel bars

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Inclusion 2**

*Classification:* Durorthidic Torrifluvents, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Channel bank margins

*Distinctive present vegetation:* Basin wildrye, basin big sagebrush

#### **Inclusion 3**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Fan skirts adjacent to fan piedmonts

*Distinctive present vegetation:* Wyoming big sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Rotinom Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

#### **Orovada Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Rotinom Soil**

*Range seeding:* Poor—too arid

*Roadfill:* Fair—low strength, shrink-swell

*Topsoil:* Good

*Daily cover for landfill:* Good

*Shallow excavations:* Moderate—flooding

*Local roads and streets:* Severe—flooding

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Orovada Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Fair—small stones, thin layer

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—frost action, flooding

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### ***Interpretive Groups***

*Land capability classification:* Rotinom soil—IIIw, irrigated, and VIIw, nonirrigated; Orovada soil—IIc, irrigated, and VIc, nonirrigated

*Range site:* Rotinom soil—028B017N; Orovada soil—028B010N; Inclusion 1—028B010N; Inclusion 2—028B009N; Inclusion 3—028B010N

## **2031—Muni-Orovada-Unius association**

*Positions on landscape:* Fan piedmonts

### ***Composition***

*Major components:*

Muni fine sandy loam, 2 to 8 percent slopes—45 percent

Orovada fine sandy loam, gravelly substratum, 2 to 4 percent slopes—30 percent

Unius gravelly silt loam, 4 to 15 percent slopes—10 percent

*Contrasting inclusions:*

Defler fine sandy loam, 0 to 4 percent slopes—8 percent

Durixerollic Camborthids, sandy-skeletal, mixed, mesic, 4 to 15 percent slopes—5 percent

Durixerollic Camborthids, coarse-loamy, mixed, mesic, 0 to 4 percent slopes—2 percent

### ***Characteristics of the Muni Soil***

*Classification:* Haploxerollic Durargids, loamy, mixed, mesic, shallow

*Positions on landscape:* Summits of fan piedmont remnants

*Parent material:* Mixed alluvium that includes loess and volcanic ash

*Slope:* 2 to 8 percent

*Elevation:* 6,500 to 6,800 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Needlegrass, bluegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 50 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Fine sandy loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 3 to 18 inches

*Texture:* Sandy clay loam, clay loam, loam

*Structure:* Prismatic

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Depth:* 18 to 49 inches

*Material:* Cemented hardpan

*Depth:* 49 to 60 inches

*Texture:* Very gravelly loamy sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Strongly alkaline

### **Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 3.3 to 4.0 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.32; T value—1; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### ***Characteristics of the Orovada Soil***

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Inset fans

*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 6,500 to 6,800 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

### **Typical Profile**

*Depth:* 0 to 5 inches

*Texture:* Fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 5 to 15 inches

*Texture:* Fine sandy loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 15 to 40 inches

*Texture:* Fine sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 40 to 60 inches

*Texture:* Stratified gravelly sandy loam to very gravelly sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 5.4 to 6.6 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.37; T value—5; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Unius Soil**

*Classification:* Haploxerollic Durorthids, loamy, mixed, mesic, shallow

*Positions on landscape:* Summits near scarp breaks and shoulder slopes of fan piedmont remnants

*Parent material:* Mixed alluvium that includes loess and volcanic ash

*Slope:* 4 to 15 percent

*Elevation:* 6,500 to 6,800 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Indian ricegrass, needlegrass, black sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 50 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Gravelly silt loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 4 to 12 inches

*Texture:* Silt loam, loam, gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 12 to 44 inches

*Material:* Cemented hardpan

*Structure:* Massive

*Consistence:* Very hard, very firm

*Depth:* 44 to 60 inches

*Texture:* Gravelly loamy sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

#### **Soil and Water Features**

*Depth to the hardpan:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 1.9 to 2.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.28; T value—1; wind erodibility group—7

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic

*Positions on landscape:* Adjacent to fan skirts and fan aprons

*Distinctive present vegetation:* Indian ricegrass, winterfat

##### **Inclusion 2**

*Classification:* Durixerollic Camborthids, sandy-skeletal, mixed, mesic

*Positions on landscape:* South-facing side slopes of fan piedmont remnants

*Distinctive present vegetation:* Galleta, shadscale

##### **Inclusion 3**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Areas adjacent to channels

*Distinctive present vegetation:* Needleandthread,  
Wyoming big sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Muni Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Orovada Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Unius Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Muni Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—cemented pan, area reclaim

*Daily cover for landfill:* Poor—cemented pan, small stones

*Shallow excavations:* Severe—cemented pan, cutbanks cave

*Local roads and streets:* Severe—cemented pan

*Pond reservoir areas:* Severe—cemented pan, seepage

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Orovada Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Poor—area reclaim

*Daily cover for landfill:* Fair—thin layer

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Probable source

*Gravel:* Improbable source—too sandy

#### **Unius Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—cemented pan, small stones

*Daily cover for landfill:* Poor—cemented pan

*Shallow excavations:* Severe—cemented pan, cutbanks cave

*Local roads and streets:* Severe—cemented pan

*Pond reservoir areas:* Severe—cemented pan, slope, seepage

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Muni soil—IVe, irrigated, and VIIs, nonirrigated; Orovada soil—VIc, nonirrigated; Unius soil—VIIs, nonirrigated

*Range site:* Muni and Orovada soils—028B010N; Unius soil—028B011N; Inclusion 1—028B013N; Inclusion 2—024X045N; Inclusion 3—028B005N

## **2060—Oxcorel-Beoska-Whirlo association**

*Positions on landscape:* Fan piedmonts

### **Composition**

*Major components:*

Oxcorel gravelly very fine sandy loam, 2 to 8 percent slopes—40 percent

Beoska silt loam, 0 to 4 percent slopes—30 percent

Whirlo gravelly loam, 2 to 8 percent slopes—15 percent

*Contrasting inclusions:*

Xerollic Camborthids, loamy-skeletal, mixed, mesic, 15 to 30 percent slopes—5 percent

Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 2 to 8 percent slopes—5 percent

Xerollic Camborthids, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—5 percent

### **Characteristics of the Oxcorel Soil**

*Classification:* Duric Natrargids, fine, montmorillonitic, mesic

*Positions on landscape:* Convex, upper summits of fan piedmont remnants

*Parent material:* Mixed alluvium that includes loess

*Slope:* 2 to 8 percent

*Elevation:* 5,200 to 5,800 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bottlebrush squirreltail, Indian ricegrass, shadscale, bud sagebrush

### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Gravelly very fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

*Depth:* 5 to 34 inches

*Texture:* Clay, clay loam

*Structure:* Prismatic  
*Consistence:* Hard, firm  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46  
*Depth:* 34 to 60 inches  
*Texture:* Very gravelly sandy loam, very gravelly loam  
*Structure:* Massive  
*Consistence:* Hard, firm  
*Reaction:* Strongly alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 46 to 60

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Very slow  
*Available water capacity:* 6.5 to 8.4 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.28; T value—5; wind erodibility group—4  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* High  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* Low

#### **Characteristics of the Beoska Soil**

*Classification:* Duric Natrargids, fine-loamy, mixed, mesic  
*Positions on landscape:* Convex, lower summits of fan piedmont remnants  
*Parent material:* Loess over loamy and gravelly mixed alluvium  
*Slope:* 0 to 4 percent  
*Elevation:* 5,200 to 5,800 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bottlebrush squirreltail

#### **Typical Profile**

*Depth:* 0 to 9 inches  
*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5  
*Depth:* 9 to 18 inches  
*Texture:* Silty clay loam, silt loam

*Structure:* Prismatic  
*Consistence:* Hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46  
*Depth:* 18 to 60 inches  
*Texture:* Stratified gravelly very fine sandy loam to gravelly sandy loam  
*Structure:* Massive  
*Consistence:* Soft, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 16 to 30 millimhos per centimeter  
*Sodicity (SAR):* 46 to 60

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 7.8 to 9.7 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Medium  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* Low

#### **Characteristics of the Whirlo Soil**

*Classification:* Typic Camborthids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Concave, lower inset fans and fan aprons  
*Parent material:* Mixed alluvium that includes a large amount of loess  
*Slope:* 2 to 8 percent  
*Elevation:* 5,200 to 5,800 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass

#### **Typical Profile**

*Depth:* 0 to 12 inches  
*Texture:* Gravelly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 12 to 24 inches

*Texture:* Very gravelly fine sandy loam  
*Structure:* Massive  
*Consistence:* Soft, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 8 millimhos per centimeter  
*Sodicity (SAR):* 5 to 13  
*Depth:* 24 to 60 inches  
*Texture:* Very gravelly coarse sandy loam  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Moderately alkaline  
*Salinity:* 4 to 16 millimhos per centimeter  
*Sodicity (SAR):* 13 to 25

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately rapid  
*Available water capacity:* 4.2 to 6.0 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.28; T value—5; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Xerollic Camborthids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Side slopes of fan piedmont remnants  
*Distinctive present vegetation:* Spiny hopsage, bluegrass, Wyoming big sagebrush

##### **Inclusion 2**

*Classification:* Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic  
*Positions on landscape:* Adjacent to fan skirts near alluvial flats  
*Distinctive present vegetation:* Shadscale, black greasewood

##### **Inclusion 3**

*Classification:* Xerollic Camborthids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* The upper inset fans  
*Distinctive present vegetation:* Wyoming big sagebrush, bottlebrush squirreltail

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Oxcorel Soil**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor

##### **Beoska Soil**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor

##### **Whirlo Soil**

*Wild herbaceous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Poor

#### **Suitability and Limitations for Selected Uses**

##### **Oxcorel Soil**

*Range seeding:* Poor—too arid, rooting depth, excess sodium  
*Roadfill:* Good  
*Topsoil:* Poor—small stones, area reclaim, excess sodium  
*Daily cover for landfill:* Poor—small stones  
*Shallow excavations:* Moderate—too clayey  
*Local roads and streets:* Severe—low strength, shrink-swell  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—seepage, excess sodium  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

##### **Beoska Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium  
*Roadfill:* Good  
*Topsoil:* Poor—small stones, excess salt, area reclaim  
*Daily cover for landfill:* Poor—small stones  
*Shallow excavations:* Slight  
*Local roads and streets:* Slight  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—excess salt, excess sodium  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

##### **Whirlo Soil**

*Range seeding:* Poor—too arid  
*Roadfill:* Good  
*Topsoil:* Poor—small stones, area reclaim, excess salt  
*Daily cover for landfill:* Poor—seepage, small stones  
*Shallow excavations:* Slight  
*Local roads and streets:* Slight  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—seepage  
*Sand:* Probable source  
*Gravel:* Probable source



### ***Interpretive Groups***

**Land capability classification:** Oxcorel soil—Ive, irrigated, and VIIs, nonirrigated; Beoska soil—IIIe, irrigated, and VIIs, nonirrigated; Whirlo soil—IIIe, irrigated, and VIIc, nonirrigated

**Range site:** Oxcorel, Beoska, and Whirlo soils—024X002N; Inclusion 1—024X020N; Inclusion 2—024X003N; Inclusion 3—024X005N

### **2061—Oxcorel-Zaidy-Grassval association**

**Positions on landscape:** Fan piedmonts

#### ***Composition***

**Major components:**

Oxcorel gravelly sandy loam, 2 to 8 percent slopes—55 percent

Zaidy very gravelly sandy loam, 2 to 8 percent slopes—15 percent

Grassval very gravelly sandy loam, 2 to 8 percent slopes—15 percent

**Contrasting inclusions:**

Wieland gravelly sandy loam, 2 to 8 percent slopes—8 percent

Durixerollic Camborthids, loamy-skeletal, mixed, mesic, 2 to 4 percent slopes—4 percent

Xerollic Camborthids, loamy-skeletal, mixed, mesic, 2 to 4 percent slopes—3 percent

#### ***Characteristics of the Oxcorel Soil***

**Classification:** Duric Natrargids, fine, montmorillonitic, mesic

**Positions on landscape:** The lower summits of fan piedmont remnants

**Parent material:** Mixed alluvium that includes loess

**Slope:** 2 to 8 percent

**Elevation:** 5,800 to 6,200 feet

**Average annual precipitation:** About 8 inches

**Average annual air temperature:** About 49 degrees F

**Frost-free season:** About 110 days

**Dominant present vegetation:** Bottlebrush squirreltail, Indian ricegrass, shadscale, bud sagebrush

#### ***Typical Profile***

**Rock fragments on surface:** 30 percent pebbles

**Depth:** 0 to 8 inches

**Texture:** Gravelly sandy loam

**Structure:** Platy

**Consistence:** Slightly hard, very friable

**Reaction:** Strongly alkaline

**Salinity:** 0 to 4 millimhos per centimeter

**Sodicity (SAR):** 0 to 5

**Depth:** 8 to 34 inches

**Texture:** Clay, clay loam

**Structure:** Prismatic

**Consistence:** Hard, firm

**Reaction:** Strongly alkaline

**Salinity:** 0 to 4 millimhos per centimeter

**Sodicity (SAR):** 25 to 46

**Depth:** 34 to 60 inches

**Texture:** Very gravelly sandy loam, very gravelly loam

**Structure:** Massive

**Consistence:** Hard, firm

**Reaction:** Strongly alkaline

**Salinity:** 2 to 8 millimhos per centimeter

**Sodicity (SAR):** 46 to 60

#### ***Soil and Water Features***

**Depth to a seasonal high water table:** More than 60 inches

**Frequency of flooding:** None

**Permeability:** Very slow

**Available water capacity:** 6.5 to 8.5 inches

**Water-supplying capacity:** 7 inches

**Runoff:** Medium

**Hydrologic group:** D

**Erosion factors (upper layer):** K value—0.17; T value—5; wind erodibility group—4

**Hazard of erosion:** By water—slight; by wind—severe

**Shrink-swell potential:** High

**Corrosivity:** To steel—high; to concrete—high

**Potential for frost action:** Low

#### ***Characteristics of the Zaidy Soil***

**Classification:** Haploxerollic Durargids, fine-loamy, mixed, mesic

**Positions on landscape:** Side slopes of fan piedmont remnants

**Parent material:** Mixed alluvium

**Slope:** 2 to 8 percent

**Elevation:** 5,800 to 6,200 feet

**Average annual precipitation:** About 9 inches

**Average annual air temperature:** About 47 degrees F

**Frost-free season:** About 100 days

**Dominant present vegetation:** Indian ricegrass, bluegrass, black sagebrush

#### ***Typical Profile***

**Rock fragments on surface:** 5 percent cobbles, 50 percent pebbles

**Depth:** 0 to 5 inches

**Texture:** Very gravelly sandy loam

**Structure:** Subangular blocky

**Consistence:** Slightly hard, very friable

**Reaction:** Mildly alkaline

**Salinity:** 0 to 2 millimhos per centimeter

**Sodicity (SAR):** 0 to 5

**Depth:** 5 to 25 inches

*Texture:* Loam, clay loam, gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

*Depth:* 25 to 60 inches

*Material:* Cemented hardpan

#### **Soil and Water Features**

*Depth to the hardpan:* 20 to 30 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 2.8 to 3.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.05; T value—2; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—moderate

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Grassval Soil**

*Classification:* Xerollic Durargids, loamy, mixed, mesic, shallow

*Positions on landscape:* The upper summits of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 2 to 8 percent

*Elevation:* 5,800 to 6,200 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 46 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, black sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 10 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Very gravelly sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 4 to 13 inches

*Texture:* Gravelly clay loam, gravelly loam

*Structure:* Subangular blocky

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 13 inches

*Material:* Indurated hardpan

#### **Soil and Water Features**

*Depth to the hardpan:* 8 to 14 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1 to 2 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—1; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Durixerollic Haplargids, fine, montmorillonitic, mesic

*Positions on landscape:* The lower summits of fan piedmont remnants

*Distinctive present vegetation:* Wyoming big sagebrush

##### **Inclusion 2**

*Classification:* Durixerollic Camborthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Inset fan remnants

*Distinctive present vegetation:* Wyoming big sagebrush

##### **Inclusion 3**

*Classification:* Xerollic Camborthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Oxcorel Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

##### **Zaidy Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

##### **Grassval Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

### ***Suitability and Limitations for Selected Uses***

#### **Oxcorel Soil**

*Range seeding:* Poor—too arid, rooting depth, excess sodium

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim, excess sodium

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Moderate—too clayey

*Local roads and streets:* Severe—low strength, shrink-swell

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Zaidy Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—small stones

*Daily cover for landfill:* Poor—cemented pan

*Shallow excavations:* Severe—cemented pan

*Local roads and streets:* Moderate—cemented pan, shrink-swell

*Pond reservoir areas:* Moderate—cemented pan, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Grassval Soil**

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—cemented pan, small stones

*Daily cover for landfill:* Poor—cemented pan, small stones

*Shallow excavations:* Severe—cemented pan

*Local roads and streets:* Severe—cemented pan

*Pond reservoir areas:* Severe—cemented pan

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### ***Interpretive Groups***

*Land capability classification:* Oxcorel soil—IVe, irrigated, and VIIs, nonirrigated; Zaidy soil—IVs, irrigated, and VIIs, nonirrigated; Grassval soil—VIIs, nonirrigated

*Range site:* Oxcorel soil—028B017N; Zaidy and Grassval soils—028B011N; Inclusion 1—028B010N; Inclusion 2—028B052N; Inclusion 3—028B010N

### **2063—Oxcorel-Pineval association**

*Positions on landscape:* Fan piedmonts

### ***Composition***

#### ***Major components:***

Oxcorel gravelly very fine sandy loam, 2 to 8 percent slopes—40 percent

Pineval gravelly loam, 15 to 30 percent slopes—25 percent

Pineval gravelly loam, 8 to 15 percent slopes—20 percent

#### ***Contrasting inclusions:***

Allor gravelly loam, 4 to 15 percent slopes—5 percent

Orovada fine sandy loam, 2 to 8 percent slopes—4 percent

Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 15 to 50 percent slopes—3 percent

Wieland gravelly loam, 2 to 8 percent slopes—3 percent

### ***Characteristics of the Oxcorel Soil***

*Classification:* Duric Natrargids, fine, montmorillonitic, mesic

*Positions on landscape:* Summits of fan piedmont remnants

*Parent material:* Mixed alluvium that includes loess

*Slope:* 2 to 8 percent

*Elevation:* 5,300 to 6,300 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bottlebrush squirreltail, Indian ricegrass, shadscale, bud sagebrush

### ***Typical Profile***

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 8 inches

*Texture:* Gravelly very fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

*Depth:* 8 to 34 inches

*Texture:* Clay, clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Strongly alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

*Depth:* 34 to 60 inches

*Texture:* Very gravelly sandy loam, very gravelly loam

*Structure:* Massive

*Consistence:* Hard, firm

*Reaction:* Strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Very slow

*Available water capacity:* 6.5 to 8.5 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.28; T value—5; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

### **Characteristics of the Pineval Soil, Moderately Steep**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Side slopes of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 15 to 30 percent

*Elevation:* 5,300 to 6,300 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 10 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 5 to 11 inches

*Texture:* Very gravelly loam, very gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 11 to 60 inches

*Texture:* Extremely gravelly sandy loam, extremely gravelly loamy sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 3.2 to 4.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.28; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Pineval Soil, Strongly Sloping**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Shoulder slopes and the upper side slopes of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 8 to 15 percent

*Elevation:* 5,300 to 6,300 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 10 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 5 to 11 inches

*Texture:* Very gravelly loam, very gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 11 to 60 inches

*Texture:* Extremely gravelly sandy loam, extremely gravelly loamy sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

### Soil and Water Features

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 3.2 to 4.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.28; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### Contrasting Inclusions

#### Inclusion 1

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* Fan aprons

*Distinctive present vegetation:* Bluegrass, needlegrass, Wyoming big sagebrush

#### Inclusion 2

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Wyoming big sagebrush

#### Inclusion 3

*Classification:* Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic

*Positions on landscape:* Scarps on side slopes of fan piedmont remnants

*Distinctive present vegetation:* Shadscale, galleta, Wyoming big sagebrush

#### Inclusion 4

*Classification:* Durixerollic Haplargids, fine, montmorillonitic, mesic

*Positions on landscape:* The upper summits of fan piedmont remnants

*Distinctive present vegetation:* Wyoming big sagebrush

### Major Current Uses

Livestock grazing, wildlife habitat

### Suitability for Wildlife Habitat Elements

#### Oxcorel Soil

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### Pineval Soil, Moderately Steep

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### Pineval Soil, Strongly Sloping

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### Suitability and Limitations for Selected Uses

#### Oxcorel Soil

*Range seeding:* Poor—too arid, rooting depth, excess sodium

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim, excess sodium

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Moderate—too clayey

*Local roads and streets:* Severe—low strength, shrink-swell

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### Pineval Soil, Moderately Steep

*Range seeding:* Fair—too arid, erodes easily

*Roadfill:* Fair—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

#### Pineval Soil, Strongly Sloping

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—slope, frost action

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

### Interpretive Groups

*Land capability classification:* Oxcorel soil—IVe, irrigated, and VIIs, nonirrigated; Pineval soil, moderately steep—VIe, nonirrigated; Pineval soil, strongly sloping—IVe, irrigated, and VIIs, nonirrigated

*Range site:* Oxcorel soil—024X002N; Pineval soils—

028B010N; Inclusion 1—024X005N; Inclusion 2—  
024X020N; Inclusion 3—024X045N; Inclusion 4—  
024X005N

## 2069—Oxcorel-Wieland-Spasprey association

*Positions on landscape:* Fan piedmonts

### Composition

*Major components:*

Oxcorel gravelly very fine sandy loam, 2 to 8 percent slopes—40 percent

Wieland gravelly loam, 2 to 8 percent slopes—30 percent

Spasprey gravelly fine sandy loam, 2 to 4 percent slopes—15 percent

*Contrasting inclusions:*

Orovada fine sandy loam, 2 to 8 percent slopes—7 percent

Duric Haplargids, loamy-skeletal, mixed, mesic, 8 to 15 percent slopes—5 percent

Duric Camborthids, coarse-loamy, mixed, mesic, 2 to 4 percent slopes—3 percent

### Characteristics of the Oxcorel Soil

*Classification:* Duric Natrargids, fine, montmorillonitic, mesic

*Positions on landscape:* The lower, concave summits of fan piedmont remnants

*Parent material:* Mixed alluvium that includes loess

*Slope:* 2 to 8 percent

*Elevation:* 5,800 to 6,200 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bottlebrush squirreltail, Indian ricegrass, shadscale, bud sagebrush

### Typical Profile

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 6 inches

*Texture:* Gravelly very fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

*Depth:* 6 to 37 inches

*Texture:* Clay, clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Strongly alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

*Depth:* 37 to 60 inches

*Texture:* Very gravelly sandy loam, very gravelly loam

*Structure:* Massive

*Consistence:* Hard, firm

*Reaction:* Strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

### Soil and Water Features

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Very slow

*Available water capacity:* 6.5 to 8.4 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.28; T value—5; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

### Characteristics of the Wieland Soil

*Classification:* Durixerollic Haplargids, fine, montmorillonitic, mesic

*Positions on landscape:* The lower and intermediate areas on convex summits of fan piedmont remnants

*Parent material:* Mixed alluvium that includes loess and volcanic ash

*Slope:* 2 to 8 percent

*Elevation:* 5,800 to 6,200 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Indian ricegrass, needlegrass, Wyoming big sagebrush

### Typical Profile

*Rock fragments on surface:* 20 percent pebbles

*Depth:* 0 to 8 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 8 to 20 inches

*Texture:* Gravelly clay

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 20 to 25 inches  
*Texture:* Gravelly clay loam, gravelly sandy clay loam  
*Structure:* Massive  
*Consistence:* Hard, firm  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 25 to 60 inches  
*Texture:* Gravelly loam, gravelly sandy loam  
*Structure:* Massive  
*Consistence:* Hard, firm  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 6 to 9 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Medium  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.32; T value—5; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* High  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Characteristics of the Spasprey Soil**

*Classification:* Haploxerollic Durargids, fine-loamy, mixed, mesic  
*Positions on landscape:* The higher summits of fan piedmont remnants adjacent to the front of mountains  
*Parent material:* Mixed alluvium  
*Slope:* 2 to 4 percent  
*Elevation:* 5,800 to 6,200 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles  
*Depth:* 0 to 5 inches  
*Texture:* Gravelly fine sandy loam  
*Structure:* Platy

*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 5 to 26 inches  
*Texture:* Clay loam, sandy clay loam  
*Structure:* Prismatic  
*Consistence:* Hard, friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 26 to 33 inches  
*Material:* Cemented hardpan  
*Depth:* 33 to 60 inches  
*Texture:* Fine sandy loam  
*Structure:* Massive  
*Consistence:* Hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to the hardpan:* 20 to 30 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 4 to 5 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Slow  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.32; T value—3; wind erodibility group—4  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Inset fans  
*Distinctive present vegetation:* Bluegrass, spiny hopsage, Wyoming big sagebrush

##### **Inclusion 2**

*Classification:* Duric Haplargids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Side slopes of fan piedmont remnants  
*Distinctive present vegetation:* Shadscale, bud sagebrush

**Inclusion 3**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Fan skirts

*Distinctive present vegetation:* Shadscale, bud sagebrush

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Oxcorel Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

**Wieland Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Spasprey Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses****Oxcorel Soil**

*Range seeding:* Poor—too arid, rooting depth, excess sodium

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim, excess sodium

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Moderate—too clayey

*Local roads and streets:* Severe—low strength, shrink-swell

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Wieland Soil**

*Range seeding:* Poor—rooting depth

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Moderate—too clayey

*Local roads and streets:* Severe—low strength, shrink-swell

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Moderate—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Spasprey Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Fair—cemented pan, area reclaim, too clayey

*Daily cover for landfill:* Poor—cemented pan

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—shrink-swell, low strength, frost action

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage, piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Oxcorel soil—IVe,

irrigated, and VIIs, nonirrigated; Wieland soil—IIle,

irrigated, and VIIs, nonirrigated; Spasprey soil—IIIs, irrigated, and VIs, nonirrigated

*Range site:* Oxcorel soil—024X002N; Wieland and

Spasprey soils—024X005N; Inclusion 1—

024X020N; Inclusions 2 and 3—024X002N

**2081—Fenster-Jesse Camp association**

*Positions on landscape:* Semibolson floors

**Composition**

*Major components:*

Fenster silt loam—50 percent

Jesse Camp silt loam, occasionally flooded—40 percent

*Contrasting inclusions:*

Kobeh gravelly loam, 0 to 4 percent slopes—4 percent

Bubus loam, 0 to 4 percent slopes—3 percent

Aeric Halaquepts, fine-loamy, mixed (calcareous), mesic, 0 to 2 percent slopes—3 percent

**Characteristics of the Fenster Soil**

*Classification:* Typic Torriorthents, fine-silty, mixed (calcareous), frigid

*Positions on landscape:* Dissected areas of stream terraces

*Parent material:* Loess and silty, calcareous alluvium

*Slope:* 0 to 2 percent

*Elevation:* 6,100 to 6,200 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Indian ricegrass, needlegrass, shadscale, bud sagebrush

**Typical Profile**

*Depth:* 0 to 5 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter



*Sodicity (SAR):* 5 to 13

*Depth:* 5 to 10 inches

*Texture:* Silt loam

*Structure:* Subangular blocky

*Consistence:* Hard, firm

*Reaction:* Very strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

*Depth:* 10 to 60 inches

*Texture:* Silt loam, silty clay loam

*Structure:* Massive

*Consistence:* Hard, firm

*Reaction:* Strongly alkaline

*Salinity:* 4 to 16 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 11 to 13 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—4L

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Moderate

#### **Characteristics of the Jesse Camp Soil**

*Classification:* Xerollic Camborthids, fine-silty, mixed, frigid

*Positions on landscape:* Stream terraces

*Parent material:* Silty alluvium that includes volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 6,100 to 6,200 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Basin wildrye, big sagebrush

#### **Typical Profile**

*Depth:* 0 to 4 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 4 to 12 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 12 to 60 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Occasional for brief periods in March through June

*Permeability:* Moderately slow

*Available water capacity:* 10 to 11 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Durixerollic Camborthids, loamy-skeletal, mixed, frigid

*Positions on landscape:* Nonburied fan skirt remnants

*Distinctive present vegetation:* Indian ricegrass, spiny hopsage, Wyoming big sagebrush

##### **Inclusion 2**

*Classification:* Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic

*Positions on landscape:* Isolated alluvial flat remnants

*Distinctive present vegetation:* Shadscale, black greasewood, bud sagebrush

##### **Inclusion 3**

*Classification:* Aeric Halaquepts, fine-loamy, mixed (calcareous), mesic

*Positions on landscape:* Alluvial flats along stream channels

*Distinctive present vegetation:* Alkali sacaton, black greasewood, basin wildrye

#### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Fenster Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Jesse Camp Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Fenster Soil**

*Range seeding:* Poor—too arid, excess salt

*Roadfill:* Poor—low strength

*Topsoil:* Poor—excess salt, excess sodium

*Daily cover for landfill:* Poor—excess sodium

*Shallow excavations:* Slight

*Local roads and streets:* Severe—low strength

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping, excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Jesse Camp Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Fair—low strength, shrink-swell

*Topsoil:* Good

*Daily cover for landfill:* Good

*Shallow excavations:* Moderate—flooding

*Local roads and streets:* Severe—flooding

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Fenster soil—VII<sub>s</sub>, nonirrigated; Jesse Camp soil—II<sub>lw</sub>, irrigated, and VI<sub>lw</sub>, nonirrigated

*Range site:* Fenster soil—028B017N; Jesse Camp soil—028B009N; Inclusion 1—028B010N; Inclusion 2—024X003N; Inclusion 3—028B004N

## **2088—Punchbowl-Jung-Teguro association**

*Positions on landscape:* Foothills

### **Composition**

*Major components:*

Punchbowl very gravelly loam, 15 to 50 percent slopes—40 percent

Jung very gravelly loam, 15 to 30 percent slopes—30 percent

Teguro very gravelly loam, 30 to 50 percent slopes, extremely stony—15 percent

*Contrasting inclusions:*

Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic, 8 to 15 percent slopes—5 percent

Lithic Natrargids, loamy, mixed, mesic, 15 to 50 percent slopes—4 percent

Punchbowl very gravelly loam, 8 to 15 percent slopes—3 percent

Rock outcrop—3 percent

### **Characteristics of the Punchbowl Soil**

*Classification:* Lithic Xerollic Haplargids, loamy, mixed, frigid

*Positions on landscape:* The lower, convex, north-facing shoulder slopes and side slopes of foothills

*Parent material:* Residuum derived from andesite, dacite, rhyolite, and tuff

*Slope:* 15 to 50 percent

*Elevation:* 6,300 to 7,000 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 90 days

*Dominant present vegetation:* Black sagebrush, bluegrass, bottlebrush squirreltail

### **Typical Profile**

*Rock fragments on surface:* 55 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 3 to 7 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 7 to 11 inches

*Texture:* Gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 11 inches

*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 8 to 14 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.1 to 1.4 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.15; T value—1;  
 wind erodibility group—7  
*Hazard of erosion:* By water—moderate; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

### **Characteristics of the Jung Soil**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal,  
 montmorillonitic, mesic  
*Positions on landscape:* Convex, south-facing shoulder  
 slopes and back slopes of foothills  
*Parent material:* Residuum derived from volcanic and  
 metavolcanic rock  
*Slope:* 15 to 30 percent  
*Elevation:* 6,300 to 7,000 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bluegrass, Indian  
 ricegrass, black sagebrush, small rabbitbrush

### **Typical Profile**

*Depth:* 0 to 8 inches  
*Texture:* Very gravelly loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Neutral  
*Depth:* 8 to 19 inches  
*Texture:* Very cobbly clay  
*Structure:* Prismatic  
*Consistence:* Very hard, firm  
*Reaction:* Moderately alkaline

*Depth:* 19 inches  
*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches  
*Depth to a seasonal high water table:* More than 60  
 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 1.9 to 2.5 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.17; T value—1;  
 wind erodibility group—7  
*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

### **Characteristics of the Teguro Soil**

*Classification:* Lithic Argixerolls, loamy, mixed, frigid  
*Positions on landscape:* The higher, north-facing side  
 slopes of foothills  
*Parent material:* Residuum derived from tuff  
*Slope:* 30 to 50 percent  
*Elevation:* 6,500 to 7,000 feet  
*Average annual precipitation:* About 12 inches  
*Average annual air temperature:* About 45 degrees F  
*Frost-free season:* About 80 days  
*Dominant present vegetation:* Bluegrass, needlegrass,  
 mountain big sagebrush, singleleaf pinyon, Utah  
 juniper  
*Site index for common trees:* Singleleaf pinyon—30;  
 Utah juniper—30

### **Typical Profile**

*Rock fragments on surface:* 15 percent stones, 55  
 percent pebbles  
*Depth:* 0 to 6 inches  
*Texture:* Very gravelly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral  
*Depth:* 6 to 16 inches  
*Texture:* Gravelly loam, gravelly clay loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Neutral  
*Depth:* 16 inches  
*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches  
*Depth to a seasonal high water table:* More than 60  
 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 1.9 to 2.4 inches  
*Water-supplying capacity:* 10 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.10; T value—1;  
 wind erodibility group—7  
*Hazard of erosion:* By water—severe; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic

*Positions on landscape:* Toe slopes of foothills

*Distinctive present vegetation:* Bluegrass, black sagebrush

#### **Inclusion 2**

*Classification:* Lithic Natrargids, loamy, mixed, mesic

*Positions on landscape:* Convex, south-facing shoulder slopes of foothills

*Distinctive present vegetation:* Shadscale, bud sagebrush, small rabbitbrush

#### **Inclusion 3**

*Classification:* Lithic Xerollic Haplargids, loamy, mixed, frigid

*Positions on landscape:* Crests of foothills

*Distinctive present vegetation:* Black sagebrush

#### **Inclusion 4**

*Positions on landscape:* Scattered peaks

*Distinctive present vegetation:* None

#### **Minor Inclusion**

*Kind of material:* Rock stripes

*Positions on landscape:* Below areas of Rock outcrop

*Distinctive present vegetation:* None

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Punchbowl Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Jung Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Teguro Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Punchbowl Soil**

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Jung Soil**

*Range seeding:* Poor—small stones, droughty

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, too clayey

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Teguro Soil**

*Range seeding:* Poor—small stones, droughty

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Punchbowl, Jung, and Teguro soils—VIIIs, nonirrigated

*Range site:* Punchbowl and Jung soils—028B016N;

Teguro soil—025X062N; Inclusion 1—024X030N;

Inclusion 2—024X002N; Inclusion 3—024X016N;

Inclusion 4—none

### **2089—Punchbowl-Jung-Locane association**

*Positions on landscape:* Foothills

### **Composition**

*Major components:*

Punchbowl very gravelly loam, 15 to 50 percent slopes—35 percent

Jung very gravelly loam, 8 to 30 percent slopes—30 percent

Locane very gravelly loam, 15 to 30 percent slopes—20 percent

*Contrasting inclusions:*

Rock outcrop—6 percent

Durixerollic Camborthids, coarse-loamy, mixed, mesic, 4 to 15 percent slopes—5 percent

Lithic Natrargids, clayey-skeletal, montmorillonitic, mesic, 15 to 50 percent slopes—4 percent

### **Characteristics of the Punchbowl Soil**

*Classification:* Lithic Xerollic Haplargids, loamy, mixed, frigid

*Positions on landscape:* The higher, convex side slopes and lower, north-facing side slopes of foothills

*Parent material:* Residuum derived from andesite, dacite, rhyolite, and tuff

*Slope:* 15 to 50 percent

*Elevation:* 6,300 to 7,000 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 90 days

*Dominant present vegetation:* Black sagebrush, bluegrass, bottlebrush squirreltail

#### **Typical Profile**

*Depth:* 0 to 3 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 3 to 7 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 7 to 11 inches

*Texture:* Gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 11 inches

*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 8 to 14 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.1 to 1.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—1; wind erodibility group—7

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Jung Soil**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic

*Positions on landscape:* The lower, convex side slopes and higher, south-facing side slopes of foothills

*Parent material:* Residuum derived from volcanic and metavolcanic rock

*Slope:* 8 to 30 percent

*Elevation:* 6,300 to 7,000 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, Indian ricegrass, black sagebrush, small rabbitbrush

#### **Typical Profile**

*Rock fragments on surface:* 40 percent pebbles

*Depth:* 0 to 8 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 8 to 19 inches

*Texture:* Very cobbly clay

*Structure:* Prismatic

*Consistence:* Very hard, firm

*Reaction:* Moderately alkaline

*Depth:* 19 inches

*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.9 to 2.5 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—7

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Locane Soil**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* The higher, concave, north-facing side slopes of foothills

*Parent material:* Residuum derived from shale and conglomerate

*Slope:* 15 to 30 percent  
*Elevation:* 6,300 to 7,000 feet  
*Average annual precipitation:* About 12 inches  
*Average annual air temperature:* About 45 degrees F  
*Frost-free season:* About 80 days  
*Dominant present vegetation:* Indian ricegrass, needlegrass, Wyoming big sagebrush

#### **Typical Profile**

*Depth:* 0 to 6 inches  
*Texture:* Very gravelly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral

*Depth:* 6 to 14 inches  
*Texture:* Very gravelly clay loam  
*Structure:* Angular blocky  
*Consistence:* Hard, friable  
*Reaction:* Neutral

*Depth:* 14 inches  
*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 1.5 to 2.1 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—7  
*Hazard of erosion:* By water—moderate; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Positions on landscape:* Scattered peaks, eroded side slopes

*Distinctive present vegetation:* None

##### **Inclusion 2**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Concave toe slopes of foothills

*Distinctive present vegetation:* Wyoming big sagebrush

##### **Inclusion 3**

*Classification:* Lithic Natrargids, clayey-skeletal, montmorillonitic, mesic

*Positions on landscape:* The lower, convex, south-facing side slopes of foothills

*Distinctive present vegetation:* Shadscale, bud sagebrush

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Punchbowl Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

##### **Jung Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

##### **Locane Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

##### **Punchbowl Soil**

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

##### **Jung Soil**

*Range seeding:* Poor—small stones, droughty

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, too clayey

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

##### **Locane Soil**

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Punchbowl, Jung, and Locane soils—VIIIs, nonirrigated

*Range site:* Punchbowl and Jung soils—028B016N; Locane soil—028B010N; Inclusion 1—none; Inclusion 2—028B010N; Inclusion 3—028B017N

### **2090—Punchbowl gravelly loam, 4 to 15 percent slopes**

*Positions on landscape:* Foothills

#### **Composition**

*Major component:*

Punchbowl gravelly loam, 4 to 15 percent slopes—85 percent

*Contrasting inclusions:*

Aridic Argixerolls, loamy-skeletal, mixed, frigid, 8 to 15 percent slopes—7 percent

Robson very cobbly loam, 8 to 15 percent slopes—5 percent

Rock outcrop—3 percent

#### **Characteristics of the Punchbowl Soil**

*Classification:* Lithic Xerollic Haplargids, loamy, mixed, frigid

*Positions on landscape:* Crests and the upper side slopes of foothills

*Parent material:* Residuum derived from andesite, dacite, rhyolite, and tuff

*Slope:* 4 to 15 percent

*Elevation:* 6,800 to 7,800 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 90 days

*Dominant present vegetation:* Black sagebrush, bluegrass, bottlebrush squirreltail

#### **Typical Profile**

*Rock fragments on surface:* 5 percent cobbles, 25 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 3 to 7 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 7 to 11 inches

*Texture:* Gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 11 inches

*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 8 to 14 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.3 to 1.7 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Aridic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Concave, north-facing side slopes and toe slopes of foothills

*Distinctive present vegetation:* Mountain big sagebrush

##### **Inclusion 2**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* Convex, stable, north-facing side slopes of foothills

*Distinctive present vegetation:* Bluegrass, low sagebrush

##### **Inclusion 3**

*Positions on landscape:* Rims and eroded side slopes of foothills

*Distinctive present vegetation:* None

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones

*Daily cover for landfill:* Poor—depth to rock, small stones

*Shallow excavations:* Severe—depth to rock

*Local roads and streets:* Severe—depth to rock

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Punchbowl soil—VII<sub>s</sub>, nonirrigated

*Range site:* Punchbowl soil—028B016N; Inclusion 1—028B030N; Inclusion 2—028B045N; Inclusion 3—none

## **2091—Punchbowl-Teguro-Sumine association**

*Positions on landscape:* Mountains

### **Composition**

*Major components:*

Punchbowl very gravelly loam, 15 to 30 percent slopes—35 percent

Teguro very gravelly loam, 30 to 50 percent slopes—25 percent

Sumine very gravelly loam, 30 to 50 percent slopes—25 percent

*Contrasting inclusions:*

Rock outcrop—5 percent

Aridic Argixerolls, loamy-skeletal, mixed, frigid, 50 to 75 percent slopes—5 percent

Cumulic Haploxerolls, loamy-skeletal, mixed, frigid, 2 to 8 percent slopes—5 percent

### **Characteristics of the Punchbowl Soil**

*Classification:* Lithic Xerollic Haplargids, loamy, mixed, frigid

*Positions on landscape:* Convex, south- and west-facing side slopes of mountains

*Parent material:* Residuum derived from andesite, dacite, rhyolite, and tuff

*Slope:* 15 to 30 percent

*Elevation:* 6,300 to 7,000 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 90 days

*Dominant present vegetation:* Black sagebrush, bluegrass, bottlebrush squirreltail

### **Typical Profile**

*Rock fragments on surface:* 55 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 3 to 7 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 7 to 11 inches

*Texture:* Gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 11 inches

*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 8 to 14 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.1 to 1.4 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—1; wind erodibility group—7

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Teguro Soil**

*Classification:* Lithic Argixerolls, loamy, mixed, frigid

*Positions on landscape:* Concave, south- and east-facing side slopes of mountains

*Parent material:* Residuum derived from tuff

*Slope:* 30 to 50 percent

*Elevation:* 6,300 to 7,000 feet

*Average annual precipitation:* About 12 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Bluegrass, needlegrass, mountain big sagebrush, singleleaf pinyon, Utah juniper

*Site index for common trees:* Singleleaf pinyon—45; Utah juniper—45

### **Typical Profile**

*Rock fragments on surface:* 55 percent pebbles



*Depth:* 0 to 4 inches  
*Texture:* Very gravelly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral

*Depth:* 4 to 16 inches  
*Texture:* Gravelly loam, gravelly clay loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Neutral

*Depth:* 16 inches  
*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 2.0 to 2.6 inches  
*Water-supplying capacity:* 10 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.20; T value—1; wind erodibility group—7  
*Hazard of erosion:* By water—severe; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Moderate

#### **Characteristics of the Sumine Soil**

*Classification:* Aridic Argixerolls, loamy-skeletal, mixed, frigid  
*Positions on landscape:* North- and east-facing side slopes of mountains  
*Parent material:* Colluvium and residuum derived from quartzite and sandstone  
*Slope:* 30 to 50 percent  
*Elevation:* 6,300 to 7,000 feet  
*Average annual precipitation:* About 12 inches  
*Average annual air temperature:* About 44 degrees F  
*Frost-free season:* About 90 days  
*Dominant present vegetation:* Bluebunch wheatgrass, mountain big sagebrush

#### **Typical Profile**

*Depth:* 0 to 10 inches  
*Texture:* Very gravelly loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Neutral  
*Depth:* 10 to 30 inches  
*Texture:* Very cobbly clay loam, very gravelly clay loam, very gravelly loam

*Structure:* Angular blocky  
*Consistence:* Hard, firm  
*Reaction:* Mildly alkaline  
*Depth:* 30 inches  
*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 2.5 to 3.6 inches  
*Water-supplying capacity:* 12 inches  
*Runoff:* Rapid  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.17; T value—2; wind erodibility group—7  
*Hazard of erosion:* By water—severe; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Positions on landscape:* Rims, escarpments  
*Distinctive present vegetation:* None

##### **Inclusion 2**

*Classification:* Aridic Argixerolls, loamy-skeletal, mixed, frigid  
*Positions on landscape:* Slightly concave, north-facing side slopes of mountains  
*Distinctive present vegetation:* Idaho fescue, Utah juniper

##### **Inclusion 3**

*Classification:* Cumulic Haploxerolls, loamy-skeletal, mixed, frigid  
*Positions on landscape:* Below springs, along canyon bottoms  
*Distinctive present vegetation:* Basin wildrye, bluegrass, basin big sagebrush

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Punchbowl Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

##### **Teguro Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Coniferous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Fair

**Sumine Soil***Wild herbaceous plants (nonirrigated):* Fair*Shrubs (nonirrigated):* Fair***Suitability and Limitations for Selected Uses*****Punchbowl Soil***Range seeding:* Poor—droughty, small stones*Roadfill:* Poor—depth to rock*Topsoil:* Poor—depth to rock, small stones, slope*Daily cover for landfill:* Poor—depth to rock, small stones, slope*Shallow excavations:* Severe—depth to rock, slope*Local roads and streets:* Severe—depth to rock, slope*Pond reservoir areas:* Severe—depth to rock, slope*Embankments, dikes, and levees:* Severe—thin layer*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines**Teguro Soil***Range seeding:* Poor—small stones, droughty*Roadfill:* Poor—depth to rock, slope*Topsoil:* Poor—depth to rock, small stones, slope*Daily cover for landfill:* Poor—depth to rock, small stones, slope*Shallow excavations:* Severe—depth to rock, slope*Local roads and streets:* Severe—depth to rock, slope*Pond reservoir areas:* Severe—depth to rock, slope*Embankments, dikes, and levees:* Severe—thin layer*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines**Sumine Soil***Range seeding:* Poor—small stones*Roadfill:* Poor—depth to rock, slope*Topsoil:* Poor—small stones, slope*Daily cover for landfill:* Poor—depth to rock, small stones, slope*Shallow excavations:* Severe—depth to rock, slope*Local roads and streets:* Severe—slope*Pond reservoir areas:* Severe—slope*Embankments, dikes, and levees:* Severe—thin layer*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines***Interpretive Groups****Land capability classification:* Punchbowl, Teguro, and Sumine soils—VIIIs, nonirrigated*Range site:* Punchbowl soil—024X030N; Teguro soil—024X049N; Sumine soil—024X029N; Inclusion 1—none; Inclusion 2—024X023N; Inclusion 3—028B003N**2092—Punchbowl-Belate-Reluctan association***Positions on landscape:* Mountains***Composition****Major components:*

Punchbowl gravelly loam, 30 to 50 percent slopes—50 percent

Belate very gravelly loam, 30 to 50 percent slopes—20 percent

Reluctan very gravelly loam, 15 to 30 percent slopes—15 percent

*Contrasting inclusions:*

Rock outcrop—6 percent

Xerollic Haplargids, loamy-skeletal, mixed, frigid, 15 to 50 percent slopes—4 percent

Durixerollic Camborthids, loamy-skeletal, mixed, frigid, 8 to 15 percent slopes—3 percent

Rubble land—2 percent

***Characteristics of the Punchbowl Soil****Classification:* Lithic Xerollic Haplargids, loamy, mixed, frigid*Positions on landscape:* Convex crests, shoulder slopes, and upper side slopes of mountains*Parent material:* Residuum derived from andesite, dacite, rhyolite, and tuff*Slope:* 30 to 50 percent*Elevation:* 6,400 to 7,700 feet*Average annual precipitation:* About 10 inches*Average annual air temperature:* About 45 degrees F*Frost-free season:* About 90 days*Dominant present vegetation:* Black sagebrush, bluegrass, bottlebrush squirreltail***Typical Profile****Rock fragments on surface:* 20 percent pebbles*Depth:* 0 to 3 inches*Texture:* Gravelly loam*Structure:* Platy*Consistence:* Slightly hard, very friable*Reaction:* Mildly alkaline*Salinity:* 0 to 2 millimhos per centimeter*Depth:* 3 to 7 inches*Texture:* Gravelly loam*Structure:* Subangular blocky*Consistence:* Slightly hard, friable*Reaction:* Mildly alkaline*Salinity:* 0 to 2 millimhos per centimeter*Depth:* 7 to 11 inches*Texture:* Gravelly clay loam*Structure:* Angular blocky*Consistence:* Hard, friable*Reaction:* Moderately alkaline*Salinity:* 0 to 2 millimhos per centimeter*Depth:* 11 inches*Material:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 8 to 14 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 1.3 to 1.7 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—6  
*Hazard of erosion:* By water—severe; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

**Characteristics of the Belate Soil**

*Classification:* Aridic Argixerolls, loamy-skeletal, mixed, frigid  
*Positions on landscape:* Convex, north-facing side slopes of mountains  
*Parent material:* Colluvium and residuum derived from tuff and andesite  
*Slope:* 30 to 50 percent  
*Elevation:* 6,900 to 7,700 feet  
*Average annual precipitation:* About 14 inches  
*Average annual air temperature:* About 43 degrees F  
*Frost-free season:* About 80 days  
*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, low sagebrush

**Typical Profile**

*Rock fragments on surface:* 50 percent pebbles  
*Depth:* 0 to 14 inches  
*Texture:* Very gravelly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, friable  
*Reaction:* Neutral  
*Depth:* 14 to 60 inches  
*Texture:* Very gravelly loam, very gravelly clay loam  
*Structure:* Angular blocky  
*Consistence:* Hard, friable  
*Reaction:* Mildly alkaline

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 6.7 to 7.8 inches  
*Water-supplying capacity:* 12 inches  
*Runoff:* Rapid  
*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—7  
*Hazard of erosion:* By water—severe; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Moderate

**Characteristics of the Reluctant Soil**

*Classification:* Aridic Argixerolls, fine-loamy, mixed, frigid  
*Positions on landscape:* Concave side slopes of mountains  
*Parent material:* Colluvium and residuum derived from rhyolitic rock  
*Slope:* 15 to 30 percent  
*Elevation:* 6,600 to 7,700 feet  
*Average annual precipitation:* About 12 inches  
*Average annual air temperature:* About 43 degrees F  
*Frost-free season:* About 80 days  
*Dominant present vegetation:* Bluebunch wheatgrass, needlegrass, Idaho fescue, mountain big sagebrush, snowberry

**Typical Profile**

*Rock fragments on surface:* 50 percent pebbles  
*Depth:* 0 to 8 inches  
*Texture:* Very gravelly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, friable  
*Reaction:* Neutral  
*Depth:* 8 to 33 inches  
*Texture:* Gravelly clay loam, gravelly loam  
*Structure:* Subangular blocky  
*Consistence:* Hard, firm  
*Reaction:* Mildly alkaline  
*Depth:* 33 inches  
*Material:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 3.7 to 4.6 inches  
*Water-supplying capacity:* 12 inches  
*Runoff:* Medium  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.15; T value—2; wind erodibility group—7  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Positions on landscape:* Scattered peaks

*Distinctive present vegetation:* None

#### **Inclusion 2**

*Classification:* Xerollic Haplargids, loamy-skeletal, mixed, frigid

*Positions on landscape:* Concave toe slopes of mountains

*Distinctive present vegetation:* Indian ricegrass, black sagebrush

#### **Inclusion 3**

*Classification:* Durixerollic Camborthids, loamy-skeletal, mixed, frigid

*Positions on landscape:* Intermountain drainageways

*Distinctive present vegetation:* Basin wildrye, basin big sagebrush

#### **Inclusion 4**

*Positions on landscape:* Rock stringers below areas of Rock outcrop

*Distinctive present vegetation:* None

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Punchbowl Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Belate Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Reluctan Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Punchbowl Soil**

*Range seeding:* Poor—droughty, erodes easily

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Belate Soil**

*Range seeding:* Poor—small stones

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Slight

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Reluctan Soil**

*Range seeding:* Poor—small stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Punchbowl soil—VIIe, nonirrigated; Belate and Reluctan soils—VIIc, nonirrigated

*Range site:* Punchbowl soil—028B016N; Belate soil—024X027N; Reluctan soil—024X021N; Inclusion 1—none; Inclusion 2—028B016N; Inclusion 3—028B003N; Inclusion 4—none

## **2093—Punchbowl-Rock outcrop association**

*Positions on landscape:* Mountains

### **Composition**

*Major components:*

Punchbowl loam, 15 to 30 percent slopes—70 percent

Rock outcrop—15 percent

*Contrasting inclusions:*

Lithic Argixerolls, loamy-skeletal, mixed, frigid, 15 to 30 percent slopes—9 percent

Durixerollic Camborthids, loamy-skeletal, mixed, frigid, 8 to 15 percent slopes—3 percent

Xeric Torriorthents, loamy-skeletal, mixed (calcareous), frigid, 8 to 15 percent slopes—3 percent

### **Characteristics of the Punchbowl Soil**

*Classification:* Lithic Xerollic Haplargids, loamy, mixed, frigid

*Positions on landscape:* Convex crests, shoulder slopes, and side slopes of mountains

*Parent material:* Residuum derived from andesite, dacite, rhyolite, and tuff

*Slope:* 15 to 30 percent

*Elevation:* 6,600 to 7,600 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 90 days

*Dominant present vegetation:* Black sagebrush, bluegrass, bottlebrush squirreltail

### **Typical Profile**

*Rock fragments on surface:* 2 percent cobbles, 10 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 3 to 7 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 7 to 11 inches

*Texture:* Gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 11 inches

*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 8 to 14 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.3 to 1.8 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.49; T value—1; wind erodibility group—5

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Rock Outcrop**

*Positions on landscape:* Scattered peaks, escarpments

*Dominant present vegetation:* None

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Lithic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Concave, north-facing side slopes of mountains

*Distinctive present vegetation:* Singleleaf pinyon, Utah juniper, Wyoming big sagebrush

#### **Inclusion 2**

*Classification:* Durixerollic Camborthids, loamy-skeletal, mixed, frigid

*Positions on landscape:* Toe slopes of mountains

*Distinctive present vegetation:* Black sagebrush

#### **Inclusion 3**

*Classification:* Xeric Torriorthents, loamy-skeletal, mixed (calcareous), frigid

*Positions on landscape:* Intermountain drainageways

*Distinctive present vegetation:* Bluegrass, Wyoming big sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Punchbowl Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Punchbowl Soil**

*Range seeding:* Poor—droughty, erodes easily

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Punchbowl soil—VIIe, nonirrigated; Rock outcrop—VIIIs, nonirrigated

*Range site:* Punchbowl soil—028B016N; Rock outcrop—none; Inclusion 1—025X062N; Inclusion 2—028B016N; Inclusion 3—028B010N

### **2094—Punchbowl-Simpark-Akerue association**

*Positions on landscape:* Mountains

### **Composition**

*Major components:*

Punchbowl gravelly loam, 8 to 15 percent slopes—40 percent

Simpark very cobbly loam, 2 to 8 percent slopes—25 percent

Akerue very cobbly loam, 15 to 30 percent slopes—20 percent

*Contrasting inclusions:*

Durixerollic Camborthids, loamy-skeletal, mixed, frigid, 4 to 15 percent slopes—8 percent

Rock outcrop—4 percent

Typic Nadurargids, fine, montmorillonitic, mesic, 8 to 15 percent slopes—3 percent

**Characteristics of the Punchbowl Soil**

*Classification:* Lithic Xerollic Haplargids, loamy, mixed, frigid

*Positions on landscape:* Convex shoulder slopes above escarpments on mountains

*Parent material:* Residuum derived from andesite, dacite, rhyolite, and tuff

*Slope:* 8 to 15 percent

*Elevation:* 6,300 to 6,800 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 90 days

*Dominant present vegetation:* Black sagebrush, bluegrass, bottlebrush squirreltail

**Typical Profile**

*Rock fragments on surface:* 25 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 3 to 7 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 7 to 11 inches

*Texture:* Gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 11 inches

*Material:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 8 to 14 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.3 to 1.7 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

**Characteristics of the Simpark Soil**

*Classification:* Xerollic Durargids, loamy-skeletal, mixed, frigid, shallow

*Positions on landscape:* Convex, broad summits of mountains

*Parent material:* Residuum that is derived from andesite and rhyolite and includes volcanic ash

*Slope:* 2 to 8 percent

*Elevation:* 6,300 to 6,800 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Black sagebrush, Indian ricegrass, bottlebrush squirreltail

**Typical Profile**

*Rock fragments on surface:* 25 percent cobbles, 20 percent pebbles

*Depth:* 0 to 13 inches

*Texture:* Very cobbly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 13 to 18 inches

*Texture:* Very cobbly loam, very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 18 to 22 inches

*Material:* Indurated hardpan

*Structure:* Massive

*Consistence:* Extremely hard, extremely firm

*Depth:* 22 inches

*Material:* Unweathered bedrock

**Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches

*Depth to bedrock:* 20 to 30 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 1.5 to 1.8 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.15; T value—1;  
     wind erodibility group—8  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

### **Characteristics of the Akerue Soil**

*Classification:* Xerollic Durargids, clayey-skeletal,  
     montmorillonitic, frigid, shallow  
*Positions on landscape:* Side slopes of mountains  
*Parent material:* Residuum derived from andesite,  
     rhyolite, and quartzite  
*Slope:* 15 to 30 percent  
*Elevation:* 6,300 to 6,800 feet  
*Average annual precipitation:* About 10 inches  
*Average annual air temperature:* About 44 degrees F  
*Frost-free season:* About 90 days  
*Dominant present vegetation:* Black sagebrush,  
     needleandthread, Indian ricegrass, small  
     rabbitbrush

### **Typical Profile**

*Rock fragments on surface:* 35 percent cobbles and stones. 35 percent pebbles

*Depth:* 0 to 3 inches  
*Texture:* Very cobbly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral  
*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 3 to 15 inches  
*Texture:* Very cobbly clay loam, very cobbly clay  
*Structure:* Angular blocky  
*Consistence:* Hard, firm  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 15 to 21 inches  
*Material:* Indurated hardpan  
*Structure:* Massive  
*Consistence:* Extremely hard, extremely firm

*Depth:* 21 inches  
*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches  
*Depth to bedrock:* 15 to 26 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 1.6 to 2.0 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.15; T value—1;  
     wind erodibility group—7  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durixerollic Camborthids, loamy-skeletal,  
     mixed, frigid  
*Positions on landscape:* Toe slopes of mountains,  
     intermountain drainageways  
*Distinctive present vegetation:* Wyoming big sagebrush

#### **Inclusion 2**

*Positions on landscape:* Rims, cliffs  
*Distinctive present vegetation:* None

#### **Inclusion 3**

*Classification:* Typic Nadurargids, fine, montmorillonitic,  
     mesic  
*Positions on landscape:* Slightly concave, south-facing  
     side slopes below escarpments on mountains  
*Distinctive present vegetation:* Shadscale, bud  
     sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Punchbowl Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### **Simpark Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### **Akerue Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Punchbowl Soil**

*Range seeding:* Poor—droughty  
*Roadfill:* Poor—depth to rock  
*Topsoil:* Poor—depth to rock, small stones  
*Daily cover for landfill:* Poor—depth to rock, small  
     stones

*Shallow excavations:* Severe—depth to rock

*Local roads and streets:* Severe—depth to rock

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Simpark Soil**

*Range seeding:* Poor—droughty, large stones

*Roadfill:* Poor—depth to rock, large stones

*Topsoil:* Poor—cemented pan, small stones

*Daily cover for landfill:* Poor—depth to rock, small stones

*Shallow excavations:* Severe—depth to rock, cemented pan, large stones

*Local roads and streets:* Severe—cemented pan, large stones

*Pond reservoir areas:* Severe—cemented pan

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Akerue Soil**

*Range seeding:* Poor—droughty, large stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, cemented pan, too clayey

*Daily cover for landfill:* Poor—depth to rock, large stones, slope

*Shallow excavations:* Severe—depth to rock, cemented pan

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, cemented pan, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable—excess fines, large stones

*Gravel:* Improbable—excess fines, large stones

#### **Interpretive Groups**

*Land capability classification:* Punchbowl, Simpark, and Akerue soils—VII, nonirrigated

*Range site:* Punchbowl, Simpark, and Akerue soils—028B016N; Inclusion 1—028B010N; Inclusion 2—none; Inclusion 3—024X002N

### **2095—Punchbowl-Robson-Rock outcrop association**

*Positions on landscape:* Mountains

#### **Composition**

*Major components:*

Punchbowl cobbly loam, 8 to 15 percent slopes—40 percent

Robson cobbly loam, 8 to 15 percent slopes—30 percent

Rock outcrop—15 percent

*Contrasting inclusions:*

Xerollic Haplargids, fine, montmorillonitic, frigid, 2 to 8 percent slopes—8 percent

Lithic Xerollic Haplargids, clayey, montmorillonitic, frigid, 8 to 15 percent slopes—4 percent

Aridic Argixerolls, fine, montmorillonitic, frigid, 8 to 15 percent slopes—3 percent

#### **Characteristics of the Punchbowl Soil**

*Classification:* Lithic Xerollic Haplargids, loamy, mixed, frigid

*Positions on landscape:* Convex crests and side slopes of mountains

*Parent material:* Residuum derived from andesite, dacite, rhyolite, and tuff

*Slope:* 8 to 15 percent

*Elevation:* 6,500 to 7,000 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 90 days

*Dominant present vegetation:* Black sagebrush, bluegrass, bottlebrush squirreltail

#### **Typical Profile**

*Rock fragments on surface:* 20 percent cobbles, 10 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Cobbly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 3 to 7 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 7 to 11 inches

*Texture:* Gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 11 inches

*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 8 to 14 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.1 to 1.8 inches



*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1;  
wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Robson Soil**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal,  
montmorillonitic, frigid

*Positions on landscape:* Convex, north-facing side  
slopes of mountains

*Parent material:* Residuum derived from siliceous tuff,  
rhyolite, and andesite

*Slope:* 8 to 15 percent

*Elevation:* 6,500 to 7,000 feet

*Average annual precipitation:* About 12 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 90 days

*Dominant present vegetation:* Low sagebrush, Sandberg  
bluegrass

### **Typical Profile**

*Rock fragments on surface:* 20 percent cobbles, 10  
percent pebbles

*Depth:* 0 to 7 inches

*Texture:* Cobbly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Salinity:* 0 to 1 millimhos per centimeter

*Depth:* 7 to 19 inches

*Texture:* Very cobbly clay, extremely cobbly clay

*Structure:* Angular blocky

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Salinity:* 0 to 1 millimho per centimeter

*Depth:* 19 inches

*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 12 to 20 inches

*Depth to a seasonal high water table:* More than 60  
inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 0.6 to 1.2 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.20; T value—1;  
wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Rock Outcrop**

*Positions on landscape:* Scattered peaks, eroded side  
slopes

*Dominant present vegetation:* None

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Xerollic Haplargids, fine, montmorillonitic,  
frigid

*Positions on landscape:* Intermountain drainageways

*Distinctive present vegetation:* Basin wildrye, basin big  
sagebrush

#### **Inclusion 2**

*Classification:* Lithic Xerollic Haplargids, clayey,  
montmorillonitic, frigid

*Positions on landscape:* Concave, upper, north-facing  
side slopes of mountains

*Distinctive present vegetation:* Mountain big sagebrush,  
Wyoming big sagebrush

#### **Inclusion 3**

*Classification:* Aridic Argixerolls, fine, montmorillonitic,  
frigid

*Positions on landscape:* High summits of mountains

*Distinctive present vegetation:* Low sagebrush, bluegrass

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Punchbowl Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Robson Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Punchbowl Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones

*Daily cover for landfill:* Poor—depth to rock, small  
stones

*Shallow excavations:* Severe—depth to rock

*Local roads and streets:* Severe—depth to rock

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Robson Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—depth to rock, large stones

*Topsoil:* Poor—depth to rock, small stones, too clayey

*Daily cover for landfill:* Poor—depth to rock, large stones

*Shallow excavations:* Severe—depth to rock, large stones

*Local roads and streets:* Severe—depth to rock, large stones

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

#### **Interpretive Groups**

*Land capability classification:* Punchbowl and Robson soils—VIIIs, nonirrigated; Rock outcrop—VIIIIs, nonirrigated

*Range site:* Punchbowl soil—028B016N; Robson soil—028B045N; Rock outcrop—none; Inclusion 1—028B003N; Inclusion 2—028B007N; Inclusion 3—028B037N

### **2096—Punchbowl-Locane-Nobuck association**

*Positions on landscape:* Mountains

#### **Composition**

*Major components:*

Punchbowl cobbly loam, 8 to 15 percent slopes—40 percent

Locane cobbly loam, 8 to 15 percent slopes—25 percent

Nobuck very cobbly loam, 15 to 30 percent slopes—20 percent

*Contrasting inclusions:*

Xerollic Camborthids, loamy-skeletal, mixed, frigid, 15 to 50 percent slopes—8 percent

Xerollic Haplargids, loamy-skeletal, mixed, frigid, 8 to 15 percent slopes—4 percent

Rock outcrop—3 percent

#### **Characteristics of the Punchbowl Soil**

*Classification:* Lithic Xerollic Haplargids, loamy, mixed, frigid

*Positions on landscape:* The upper, west- and south-facing side slopes of mountains

*Parent material:* Residuum derived from andesite, dacite, rhyolite, and tuff

*Slope:* 8 to 15 percent

*Elevation:* 6,500 to 7,000 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 90 days

*Dominant present vegetation:* Black sagebrush, bluegrass, bottlebrush squirreltail

#### **Typical Profile**

*Depth:* 0 to 3 inches

*Texture:* Cobbly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 3 to 7 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 7 to 11 inches

*Texture:* Gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 11 inches

*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 8 to 14 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.1 to 1.8 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Locane Soil**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* North-facing side slopes of mountains

*Parent material:* Residuum derived from shale and conglomerate

*Slope:* 8 to 15 percent

*Elevation:* 6,200 to 7,000 feet  
*Average annual precipitation:* About 12 inches  
*Average annual air temperature:* About 45 degrees F  
*Frost-free season:* About 80 days  
*Dominant present vegetation:* Indian ricegrass,  
 needlegrass, Wyoming big sagebrush

#### **Typical Profile**

*Depth:* 0 to 5 inches  
*Texture:* Cobbly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral

*Depth:* 5 to 19 inches  
*Texture:* Very gravelly clay loam  
*Structure:* Angular blocky  
*Consistence:* Hard, friable  
*Reaction:* Neutral

*Depth:* 19 inches  
*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 2.0 to 2.6 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Low

#### **Characteristics of the Nobuck Soil**

*Classification:* Xerollic Haplargids, loamy-skeletal, mixed, frigid  
*Positions on landscape:* The lower side slopes of mountains  
*Parent material:* Colluvium derived from volcanic rock  
*Slope:* 15 to 30 percent  
*Elevation:* 6,200 to 6,800 feet  
*Average annual precipitation:* About 10 inches  
*Average annual air temperature:* About 44 degrees F  
*Frost-free season:* About 90 days  
*Dominant present vegetation:* Indian ricegrass, bluegrass, black sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 5 percent stones and boulders, 20 percent cobbles, 35 percent pebbles

*Depth:* 0 to 7 inches  
*Texture:* Very cobbly loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Neutral

*Depth:* 7 to 42 inches  
*Texture:* Very gravelly clay loam, very gravelly sandy clay loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Mildly alkaline

*Depth:* 42 to 60 inches  
*Texture:* Very gravelly loam  
*Structure:* Massive  
*Consistence:* Hard, firm  
*Reaction:* Moderately alkaline

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 4.6 to 5.5 inches  
*Water-supplying capacity:* 10 inches  
*Runoff:* Rapid  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.15; T value—5; wind erodibility group—8  
*Hazard of erosion:* By water—moderate; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Xerollic Camborthids, loamy-skeletal, mixed, frigid  
*Positions on landscape:* Concave, colluvial side slopes of mountains  
*Distinctive present vegetation:* Bluegrass, black sagebrush

##### **Inclusion 2**

*Classification:* Xerollic Haplargids, loamy-skeletal, mixed, frigid  
*Positions on landscape:* Toe slopes of mountains  
*Distinctive present vegetation:* Mountain big sagebrush, Wyoming big sagebrush

##### **Inclusion 3**

*Positions on landscape:* Scattered peaks and knobs  
*Distinctive present vegetation:* None

#### **Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Punchbowl Soil***Wild herbaceous plants (nonirrigated):* Fair*Shrubs (nonirrigated):* Fair**Locane Soil***Wild herbaceous plants (nonirrigated):* Fair*Shrubs (nonirrigated):* Fair**Nobuck Soil***Wild herbaceous plants (nonirrigated):* Fair*Shrubs (nonirrigated):* Fair**Suitability and Limitations for Selected Uses****Punchbowl Soil***Range seeding:* Poor—droughty*Roadfill:* Poor—depth to rock*Topsoil:* Poor—depth to rock, small stones, slope*Daily cover for landfill:* Poor—depth to rock, small stones, slope*Shallow excavations:* Severe—depth to rock, slope*Local roads and streets:* Severe—depth to rock, slope*Pond reservoir areas:* Severe—depth to rock, slope*Embankments, dikes, and levees:* Severe—thin layer*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines**Locane Soil***Range seeding:* Poor—droughty*Roadfill:* Poor—depth to rock*Topsoil:* Poor—depth to rock, small stones*Daily cover for landfill:* Poor—depth to rock, small stones*Shallow excavations:* Severe—depth to rock*Local roads and streets:* Severe—depth to rock*Pond reservoir areas:* Severe—depth to rock, slope*Embankments, dikes, and levees:* Severe—thin layer*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines**Nobuck Soil***Range seeding:* Poor—large stones*Roadfill:* Fair—large stones, slope*Topsoil:* Poor—small stones, area reclaim, slope*Daily cover for landfill:* Poor—small stones, slope*Shallow excavations:* Severe—slope*Local roads and streets:* Severe—slope*Pond reservoir areas:* Severe—slope*Embankments, dikes, and levees:* Moderate—large stones*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines**Interpretive Groups***Land capability classification:* Punchbowl soil—VIIe, nonirrigated; Locane and Nobuck soils—VII, nonirrigated*Range site:* Punchbowl and Nobuck soils—028B016N;

Locane soil—024X005N; Inclusion 1—028B016N;

Inclusion 2—028B007N; Inclusion 3—none

**2097—Punchbowl-Itca association***Positions on landscape:* Mountains**Composition***Major components:*

Punchbowl gravelly loam, 15 to 30 percent slopes—55 percent

Itca cobbly loam, 15 to 30 percent slopes—30 percent

*Contrasting inclusions:*

Rock outcrop—8 percent

Lithic Xerollic Haplargids, loamy, mixed, frigid, 8 to 15 percent slopes—5 percent

Xerollic Haplargids, fine-loamy, mixed, frigid, 8 to 15 percent slopes—2 percent

**Characteristics of the Punchbowl Soil***Classification:* Lithic Xerollic Haplargids, loamy, mixed, frigid*Positions on landscape:* Crests and east- and south-facing side slopes of mountains*Parent material:* Residuum derived from andesite, dacite, rhyolite, and tuff*Slope:* 15 to 30 percent*Elevation:* 6,300 to 7,100 feet*Average annual precipitation:* About 9 inches*Average annual air temperature:* About 45 degrees F*Frost-free season:* About 90 days*Dominant present vegetation:* Black sagebrush, bluegrass, bottlebrush squirreltail**Typical Profile***Rock fragments on surface:* 25 percent pebbles*Depth:* 0 to 3 inches*Texture:* Gravelly loam*Structure:* Platy*Consistence:* Slightly hard, very friable*Reaction:* Mildly alkaline*Salinity:* 0 to 2 millimhos per centimeter*Depth:* 3 to 7 inches*Texture:* Gravelly loam*Structure:* Subangular blocky*Consistence:* Slightly hard, friable*Reaction:* Moderately alkaline*Salinity:* 0 to 2 millimhos per centimeter*Depth:* 7 to 11 inches*Texture:* Gravelly clay loam*Structure:* Angular blocky*Consistence:* Hard, friable*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 11 inches

*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 8 to 14 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.3 to 1.7 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Itca Soil**

*Classification:* Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* North-facing side slopes of mountains

*Parent material:* Residuum derived from extrusive volcanic and pyroclastic rock

*Slope:* 15 to 30 percent

*Elevation:* 6,300 to 7,100 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Idaho fescue, bluegrass, singleleaf pinyon, Utah juniper, mountain big sagebrush

*Site index for singleleaf pinyon:* 65

#### **Typical Profile**

*Rock fragments on surface:* 20 percent cobbles, 10 percent pebbles

*Depth:* 0 to 9 inches

*Texture:* Cobbly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 9 to 17 inches

*Texture:* Very gravelly clay, very gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 17 inches

*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.8 to 2.3 inches

*Water-supplying capacity:* 10 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Positions on landscape:* Escarpments, scattered peaks

*Distinctive present vegetation:* None

##### **Inclusion 2**

*Classification:* Lithic Xerollic Haplargids, loamy, mixed, frigid

*Positions on landscape:* The upper, south-facing side slopes of mountains

*Distinctive present vegetation:* Black sagebrush, singleleaf pinyon, Utah juniper

##### **Inclusion 3**

*Classification:* Xerollic Haplargids, fine-loamy, mixed, frigid

*Positions on landscape:* Intermountain drainageways

*Distinctive present vegetation:* Bluebunch wheatgrass, mountain big sagebrush

#### **Major Uses**

*Current uses:* Livestock grazing, wildlife habitat

*Potential foreseeable use:* Cordwood production

#### **Suitability for Wildlife Habitat Elements**

##### **Punchbowl Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

##### **Itca Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

##### **Punchbowl Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Itca Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, too clayey, small stones

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Punchbowl and Itca soils—Vllc, nonirrigated

*Range site:* Punchbowl soil—028B016N; Itca soil—025X061N; Inclusion 1—none; Inclusion 2—025X063N; Inclusion 3—028B007N

### **2099—Punchbowl-Roca-Rock outcrop association**

*Positions on landscape:* Mountains

#### **Composition**

*Major components:*

Punchbowl very gravelly loam, 15 to 30 percent slopes—45 percent

Roca very cobbly loam, 15 to 30 percent slopes—25 percent

Rock outcrop—15 percent

*Contrasting inclusions:*

Lithic Xeric Torriorthents, loamy-skeletal, carbonatic, frigid, 30 to 50 percent slopes—6 percent

Xerollic Durargids, loamy, mixed, frigid (shallow), 15 to 30 percent slopes—6 percent

Typic Haploxerolls, loamy-skeletal, mixed, frigid, 30 to 50 percent slopes—3 percent

#### **Characteristics of the Punchbowl Soil**

*Classification:* Lithic Xerollic Haplargids, loamy, mixed, frigid

*Positions on landscape:* Convex summits, shoulder slopes, east- and west-facing side slopes of mountains

*Parent material:* Residuum derived from andesite, dacite, rhyolite, and tuff

*Slope:* 15 to 30 percent

*Elevation:* 6,200 to 7,400 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 90 days

*Dominant present vegetation:* Black sagebrush, bluegrass, bottlebrush squirreltail

#### **Typical Profile**

*Rock fragments on surface:* 55 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 3 to 7 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 7 to 11 inches

*Texture:* Gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 11 inches

*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 8 to 14 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.1 to 1.4 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—1; wind erodibility group—7

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Roca Soil**

*Classification:* Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* South-facing side slopes of mountains

*Parent material:* Residuum derived from shale and chert

*Slope:* 15 to 30 percent

*Elevation:* 6,200 to 7,400 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Bluegrass, bluebunch wheatgrass, big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 20 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Very cobbly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 5 to 27 inches

*Texture:* Very gravelly clay loam, very gravelly clay

*Structure:* Angular blocky

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 27 inches

*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Very slow

*Available water capacity:* 2.6 to 3.4 inches

*Water-supplying capacity:* 11 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—2; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Rock Outcrop**

*Positions on landscape:* Knobs and eroded side slopes of mountains

*Dominant present vegetation:* None

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Lithic Xeric Torriorthents, loamy-skeletal, carbonatic, frigid

*Positions on landscape:* Convex side slopes of mountains

*Distinctive present vegetation:* Indian ricegrass, black sagebrush

#### **Inclusion 2**

*Classification:* Xerollic Durargids, loamy, mixed, frigid (shallow)

*Positions on landscape:* The lower side slopes and toe slopes of mountains

*Distinctive present vegetation:* Needlegrass, bluebunch wheatgrass, big sagebrush

#### **Inclusion 3**

*Classification:* Typic Haploxerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* North-facing side slopes of mountains

*Distinctive present vegetation:* Idaho fescue, mountain big sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Punchbowl Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Roca Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Punchbowl Soil**

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Roca Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Punchbowl and Roca soils—VIIIs, nonirrigated; Rock outcrop—VIIIIs, nonirrigated

*Range site:* Punchbowl soil—028B016N; Roca soil—024X028N; Rock outcrop—none; Inclusion 1—028B016N; Inclusion 2—025X014N; Inclusion 3—024X021N

## **2100—Grassval-Grina-Unsel Variant association**

*Positions on landscape:* Fan piedmonts, low rolling hills

### **Composition**

*Major components:*

Grassval gravelly loam, 4 to 8 percent slopes—35 percent

Grina very gravelly loam, eroded, 15 to 50 percent slopes—30 percent

Unsel Variant very gravelly loam, 15 to 30 percent slopes—20 percent

*Contrasting inclusions:*

Duric Natrargids, fine, montmorillonitic, mixed, 2 to 8 percent slopes—5 percent

Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic, 2 to 8 percent slopes—4 percent

Xerollic Haplargids, loamy-skeletal, mixed, mesic, 15 to 50 percent slopes—3 percent

Puett fine sandy loam, 30 to 50 percent slopes—3 percent

### **Characteristics of the Grassval Soil**

*Classification:* Xerollic Durargids, loamy, mixed, mesic (shallow)

*Positions on landscape:* Summits of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 4 to 8 percent

*Elevation:* 5,300 to 5,600 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 46 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, black sagebrush

### **Typical Profile**

*Rock fragments on surface:* 10 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 4 to 13 inches

*Texture:* Gravelly clay loam, gravelly loam

*Structure:* Subangular blocky

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 13 inches

*Material:* Indurated hardpan

### **Soil and Water Features**

*Depth to the hardpan:* 8 to 14 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.6 to 1.9 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Grina Soil**

*Classification:* Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow

*Positions on landscape:* Foothills along the outer margin of fan piedmont remnants

*Parent material:* Residuum derived from sedimentary rock

*Slope:* 15 to 50 percent

*Elevation:* 5,300 to 5,600 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, Wyoming big sagebrush, Utah juniper, black sagebrush

*Site index for Utah juniper:* 18

### **Typical Profile**

*Rock fragments on surface:* 55 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline



*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 3 to 14 inches

*Texture:* Silt loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 14 inches

*Material:* Weathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.7 to 2.5 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Unsel Variant Soil**

*Classification:* Duric Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* South-facing side slopes of fan piedmont remnants

*Parent material:* Colluvium over residuum derived from tuffaceous sediment

*Slope:* 15 to 30 percent

*Elevation:* 5,300 to 5,600 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bottlebrush squirreltail, shadscale, bud sagebrush

### **Typical Profile**

*Rock fragments on surface:* 15 percent cobbles, 45 percent pebbles

*Depth:* 0 to 2 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 2 to 15 inches

*Texture:* Gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

*Depth:* 15 to 22 inches

*Texture:* Gravelly loam

*Structure:* Massive

*Consistence:* Hard, firm

*Reaction:* Very strongly alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

*Depth:* 22 inches

*Material:* Weathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 2.8 to 3.5 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.15; T value—2; wind erodibility group—7

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Duric Natrargids, fine, montmorillonitic, mesic

*Positions on landscape:* Summits of hill remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush

#### **Inclusion 2**

*Classification:* Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Wyoming big sagebrush, bottlebrush squirreltail

#### **Inclusion 3**

*Classification:* Xerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* North-facing side slopes of fan piedmont remnants

*Distinctive present vegetation:* Black sagebrush

**Inclusion 4**

*Classification:* Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow

*Positions on landscape:* Eroded side slopes of hill remnants

*Distinctive present vegetation:* Wyoming big sagebrush, black sagebrush

**Minor Inclusion**

*Kind of material:* Exposed rock

*Positions on landscape:* Crests and side slopes of hills

*Distinctive present vegetation:* None

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Grassval Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

**Grina Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Fair

**Unsel Variant Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

**Suitability and Limitations for Selected Uses****Grassval Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—cemented pan, small stones

*Daily cover for landfill:* Poor—cemented pan, small stones

*Shallow excavations:* Severe—cemented pan

*Local roads and streets:* Severe—cemented pan

*Pond reservoir areas:* Severe—cemented pan

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Grina Soil**

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth to rock, low strength, slope

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—low strength, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Unsel Variant Soil**

*Range seeding:* Poor—too arid, small stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Grassval, Grina, and Unsel  
Variant soils—VIIIs, nonirrigated

*Range site:* Grassval soil—024X030N; Grina soil—025X059N; Unsel Variant soil—024X002N; Inclusion 1—024X002N; Inclusion 2—024X020N; Inclusion 3—024X030N; Inclusion 4—025X025N

**2101—Grassval-Oxcorel association**

*Positions on landscape:* Fan piedmonts

**Composition**

*Major components:*

Grassval fine sandy loam, 8 to 15 percent slopes—50 percent

Oxcorel very gravelly clay loam, eroded, 8 to 15 percent slopes—20 percent

Oxcorel gravelly fine sandy loam, 2 to 4 percent slopes—15 percent

*Contrasting inclusions:*

Allor gravelly loam, 2 to 8 percent slopes—7 percent

Duric Natrargids, clayey-skeletal, montmorillonitic, mesic, 15 to 30 percent slopes—4 percent

Typic Durargids, fine, montmorillonitic, mesic, eroded, 30 to 50 percent slopes—4 percent

**Characteristics of the Grassval Soil**

*Classification:* Xerollic Durargids, loamy, mixed, mesic, shallow

*Positions on landscape:* The upper summits of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 8 to 15 percent

*Elevation:* 5,800 to 6,800 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 46 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, black sagebrush

**Typical Profile**

*Rock fragments on surface:* 10 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Fine sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 4 to 13 inches  
*Texture:* Gravelly clay loam, gravelly loam  
*Structure:* Subangular blocky  
*Consistence:* Hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 13 inches  
*Material:* Indurated hardpan

#### **Soil and Water Features**

*Depth to the hardpan:* 8 to 14 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 1.6 to 1.9 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.32; T value—1; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Characteristics of the Oxcorel Soil, Eroded**

*Classification:* Duric Natrargids, fine, montmorillonitic, mesic  
*Positions on landscape:* South-facing side slopes of fan piedmont remnants  
*Parent material:* Mixed alluvium that includes loess  
*Slope:* 8 to 15 percent  
*Elevation:* 5,800 to 6,800 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bottlebrush squirreltail, shadscale, Wyoming big sagebrush, galleta

#### **Typical Profile**

*Rock fragments on surface:* 50 percent pebbles  
*Depth:* 0 to 3 inches  
*Texture:* Very gravelly clay loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 2 to 10  
*Depth:* 3 to 30 inches  
*Texture:* Clay, clay loam  
*Structure:* Prismatic  
*Consistence:* Hard, firm  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46  
*Depth:* 30 to 60 inches  
*Texture:* Very gravelly sandy loam, very gravelly loam  
*Structure:* Massive  
*Consistence:* Hard, firm  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 8 millimhos per centimeter  
*Sodicity (SAR):* 46 to 60

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Very slow  
*Available water capacity:* 6 to 8 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.10; T value—5; wind erodibility group—8  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* High  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* Low

#### **Characteristics of the Oxcorel Soil**

*Classification:* Duric Natrargids, fine, montmorillonitic, mesic  
*Positions on landscape:* The lower summits of fan piedmont remnants  
*Parent material:* Mixed alluvium that includes loess  
*Slope:* 2 to 4 percent  
*Elevation:* 5,800 to 6,800 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bottlebrush squirreltail, Indian ricegrass, shadscale, bud sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles  
*Depth:* 0 to 8 inches  
*Texture:* Gravelly fine sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

*Depth:* 8 to 34 inches

*Texture:* Clay, clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 25 to 40

*Depth:* 34 to 60 inches

*Texture:* Very gravelly sandy loam, very gravelly loam

*Structure:* Massive

*Consistence:* Hard, firm

*Reaction:* Strongly alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Very slow

*Available water capacity:* 6 to 8 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.17; T value—5; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* Fan aprons, inset fans

*Distinctive present vegetation:* Bluegrass, Wyoming big sagebrush

##### **Inclusion 2**

*Classification:* Duric Natrargids, clayey-skeletal, montmorillonitic, mesic

*Positions on landscape:* Steepest parts of side slopes of fan piedmont remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush

##### **Inclusion 3**

*Classification:* Typic Durargids, fine, montmorillonitic, mesic, eroded

*Positions on landscape:* Scarps on fan piedmont remnants

*Distinctive present vegetation:* Shadscale, Wyoming big sagebrush, galleta

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Grassval Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

##### **Oxcorel Soil, Eroded**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

##### **Oxcorel Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Suitability and Limitations for Selected Uses**

##### **Grassval Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—cemented pan, small stones

*Daily cover for landfill:* Poor—cemented pan, small stones

*Shallow excavations:* Severe—cemented pan

*Local roads and streets:* Severe—cemented pan

*Pond reservoir areas:* Severe—cemented pan, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

##### **Oxcorel Soil, Eroded**

*Range seeding:* Poor—too arid, small stones, rooting depth

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim, excess sodium

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Moderate—too clayey, slope

*Local roads and streets:* Severe—low strength, shrink-swell

*Pond reservoir areas:* Severe—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

##### **Oxcorel Soil**

*Range seeding:* Poor—too arid, rooting depth, excess sodium

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim, excess sodium

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Moderate—too clayey  
*Local roads and streets:* Severe—low strength, shrink-swell  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—seepage, excess sodium  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Grassval and Oxcorel, eroded, soils—VIIIs, nonirrigated; Oxcorel soil—IVe, irrigated, and VIIIs, nonirrigated  
*Range site:* Grassval soil—028B011N; Oxcorel soil, eroded—024X045N; Oxcorel soil—028B017N; Inclusion 1—028B010N; Inclusion 2—024X025N; Inclusion 3—024X045N

## **2102—Grassval-Wieland association**

*Positions on landscape:* Fan piedmonts

### **Composition**

*Major components:*

Grassval gravelly loam, 2 to 8 percent slopes—55 percent  
 Wieland gravelly loam, 2 to 8 percent slopes—40 percent

*Contrasting inclusions:*

Duric Natrargids, clayey-skeletal, montmorillonitic, mesic, 15 to 30 percent slopes—3 percent  
 Duric Natrargids, fine, montmorillonitic, mesic, 2 to 8 percent slopes—2 percent

### **Characteristics of the Grassval Soil**

*Classification:* Xerollic Durargids, loamy, mixed, mesic (shallow)

*Positions on landscape:* The upper summits of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 2 to 8 percent

*Elevation:* 6,400 to 6,800 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 46 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, black sagebrush

### **Typical Profile**

*Rock fragments on surface:* 10 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Depth:* 4 to 13 inches

*Texture:* Gravelly clay loam, gravelly loam

*Structure:* Subangular blocky

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

*Depth:* 13 inches

*Material:* Indurated hardpan

### **Soil and Water Features**

*Depth to the hardpan:* 8 to 14 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.6 to 1.9 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Wieland Soil**

*Classification:* Durixerollic Haplargids, fine, montmorillonitic, mesic

*Positions on landscape:* The lower summits of fan piedmont remnants

*Parent material:* Mixed alluvium that includes loess and volcanic ash

*Slope:* 2 to 8 percent

*Elevation:* 6,400 to 6,800 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Indian ricegrass, needlegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 20 percent pebbles

*Depth:* 0 to 8 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Mildly alkaline

*Depth:* 8 to 20 inches

*Texture:* Gravelly clay

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Moderately alkaline

*Depth:* 20 to 25 inches

*Texture:* Gravelly clay loam, gravelly sandy clay loam

*Structure:* Massive

*Consistence:* Hard, firm

*Reaction:* Moderately alkaline

*Depth:* 25 to 60 inches

*Texture:* Gravelly loam, gravelly sandy loam

*Structure:* Massive

*Consistence:* Hard, firm

*Reaction:* Moderately alkaline

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 6 to 9 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Medium

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.32; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Duric Natrargids, clayey-skeletal, montmorillonitic, mesic

*Positions on landscape:* Side slopes of fan piedmont remnants

*Distinctive present vegetation:* Shadscale, Wyoming big sagebrush

##### **Inclusion 2**

*Classification:* Duric Natrargids, fine, montmorillonitic, mesic

*Positions on landscape:* The lower summits of fan piedmont remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Grassval Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

##### **Wieland Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

##### **Grassval Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—cemented pan, small stones

*Daily cover for landfill:* Poor—cemented pan, small stones

*Shallow excavations:* Severe—cemented pan

*Local roads and streets:* Severe—cemented pan

*Pond reservoir areas:* Severe—cemented pan, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

##### **Wieland Soil**

*Range seeding:* Poor—rooting depth

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Moderate—too clayey

*Local roads and streets:* Severe—low strength, shrink-swell

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Moderate—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Grassval soil—VII<sub>s</sub>, nonirrigated; Wieland soil—III<sub>e</sub>, irrigated, and VI<sub>s</sub>, nonirrigated

*Range site:* Grassval soil—028B011N; Wieland soil—028B010N; Inclusion 1—024X026N; Inclusion 2—028B017N

### **2104—Grassval-Punchbowl association**

*Positions on landscape:* Foothills, fan piedmonts

#### **Composition**

*Major components:*

Grassval gravelly loam, 4 to 15 percent slopes—60 percent

Punchbowl gravelly fine sandy loam, 15 to 30 percent slopes—25 percent

*Contrasting inclusions:*

Haplic Nadurargids, loamy, mixed, mesic, shallow, 8 to 30 percent slopes—7 percent

Rock outcrop—4 percent

Xerollic Camborthids, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—2 percent

Xerollic Camborthids, coarse-loamy, mixed, mesic, 2 to 8 percent slopes—2 percent

#### **Characteristics of the Grassval Soil**

*Classification:* Xerollic Durargids, loamy, mixed, mesic, shallow

*Positions on landscape:* Fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 4 to 15 percent

*Elevation:* 6,200 to 6,800 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 46 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Indian ricegrass,  
bottlebrush squirreltail, black sagebrush

### **Typical Profile**

*Rock fragments on surface:* 10 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Depth:* 4 to 13 inches

*Texture:* Gravelly clay loam, gravelly loam

*Structure:* Subangular blocky

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

*Depth:* 13 inches

*Material:* Indurated hardpan

### **Soil and Water Features**

*Depth to the hardpan:* 8 to 14 inches

*Depth to a seasonal high water table:* More than 60  
inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.6 to 1.9 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1;  
wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Punchbowl Soil**

*Classification:* Lithic Xerollic Haplargids, loamy, mixed,  
frigid

*Positions on landscape:* Summits and side slopes of  
foothills

*Parent material:* Residuum derived from andesite,  
dacite, rhyolite, and tuff

*Slope:* 15 to 30 percent

*Elevation:* 6,200 to 7,000 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 90 days

*Dominant present vegetation:* Black sagebrush,  
bluegrass, bottlebrush squirreltail

### **Typical Profile**

*Rock fragments on surface:* 25 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 3 to 7 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 7 to 11 inches

*Texture:* Gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 11 inches

*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 8 to 14 inches

*Depth to a seasonal high water table:* More than 60  
inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.1 to 1.5 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.20; T value—1;  
wind erodibility group—4

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Haplic Nadurargids, loamy, mixed, mesic,  
shallow

*Positions on landscape:* Side slopes of fan piedmont  
remnants

*Distinctive present vegetation:* Shadscale, bud  
sagebrush, small rabbitbrush, Wyoming big  
sagebrush

**Inclusion 2**

*Positions on landscape:* Scattered peaks and eroded side slopes of fan piedmont remnants

*Distinctive present vegetation:* None

**Inclusion 3**

*Classification:* Xerollic Camborthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Bluegrass, basin big sagebrush

**Inclusion 4**

*Classification:* Xerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* The lower inset fans, narrow fan skirts

*Distinctive present vegetation:* Wyoming big sagebrush

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Grassval Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Punchbowl Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses****Grassval Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—cemented pan, small stones

*Daily cover for landfill:* Poor—cemented pan, small stones

*Shallow excavations:* Severe—cemented pan

*Local roads and streets:* Severe—cemented pan

*Pond reservoir areas:* Severe—cemented pan, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Punchbowl Soil**

*Range seeding:* Poor—droughty, depth to rock

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Grassval soil—VII<sub>1</sub>, nonirrigated; Punchbowl soil—VII<sub>2</sub>, nonirrigated

*Range site:* Grassval soil—028B011N; Punchbowl soil—028B016N; Inclusion 1—024X045N; Inclusion 2—none; Inclusion 3—028B003N; Inclusion 4—028B010N

**2105—Grassval-Glyphs-Muni association**

*Positions on landscape:* Fan piedmonts

**Composition**

*Major components:*

Grassval gravelly loam, 4 to 8 percent slopes—50 percent

Glyphs fine sandy loam, 2 to 8 percent slopes—20 percent

Muni fine sandy loam, 2 to 4 percent slopes—15 percent

*Contrasting inclusions:*

Orovada fine sandy loam, 2 to 4 percent slopes—7 percent

Durixerollic Haplargids, loamy-skeletal, mixed, mesic, 2 to 4 percent slopes—5 percent

Xerollic Camborthids, coarse-loamy, mixed, mesic, 2 to 4 percent slopes—3 percent

**Characteristics of the Grassval Soil**

*Classification:* Xerollic Durargids, loamy, mixed, mesic, shallow

*Positions on landscape:* The upper summits of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 4 to 8 percent

*Elevation:* 6,300 to 6,800 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 46 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, black sagebrush

**Typical Profile**

*Rock fragments on surface:* 10 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 4 to 13 inches

*Texture:* Gravelly clay loam, gravelly loam

*Structure:* Subangular blocky



*Consistence:* Hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 13 inches  
*Material:* Indurated hardpan

#### **Soil and Water Features**

*Depth to the hardpan:* 8 to 14 inches  
*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 1.6 to 1.9 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Glyphs Soil**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* The lower part of fan piedmont remnants

*Parent material:* Mixed alluvium that includes loess and volcanic ash

*Slope:* 2 to 8 percent

*Elevation:* 6,300 to 7,000 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Indian ricegrass, needleandthread, bluegrass, Wyoming big sagebrush

#### **Typical Profile**

*Depth:* 0 to 7 inches  
*Texture:* Fine sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 7 to 17 inches  
*Texture:* Gravelly clay loam, gravelly sandy clay loam  
*Structure:* Angular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 17 to 37 inches  
*Texture:* Gravelly sandy loam  
*Structure:* Massive

*Consistence:* Hard, firm  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 8 millimhos per centimeter  
*Sodicity (SAR):* 0 to 10

*Depth:* 37 to 60 inches  
*Texture:* Very gravelly coarse sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None  
*Permeability:* Moderately slow over very rapid  
*Available water capacity:* 4.7 to 6.5 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.28; T value—3; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Muni Soil**

*Classification:* Haploxerollic Durargids, loamy, mixed, mesic, shallow

*Positions on landscape:* The intermediate areas of fan piedmont remnants

*Parent material:* Mixed alluvium that includes loess and volcanic ash

*Slope:* 2 to 4 percent

*Elevation:* 6,300 to 7,100 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Needlegrass, bluegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 3 inches  
*Texture:* Fine sandy loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Neutral  
*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 3 to 18 inches

*Texture:* Sandy clay loam, clay loam, loam

*Structure:* Prismatic

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 18 to 49 inches

*Material:* Cemented hardpan

*Depth:* 49 to 60 inches

*Texture:* Very gravelly loamy sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Strongly alkaline

### **Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 2.5 to 3.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.32; T value—1; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Fan skirts

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Inclusion 2**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Fan drainageways

*Distinctive present vegetation:* Basin big sagebrush, bluegrass

#### **Inclusion 3**

*Classification:* Xerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Basin wildrye, bluegrass, basin big sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Grassval Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Glyphs Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Muni Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Grassval Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—cemented pan, small stones

*Daily cover for landfill:* Poor—cemented pan, small stones

*Shallow excavations:* Severe—cemented pan

*Local roads and streets:* Severe—cemented pan

*Pond reservoir areas:* Severe—cemented pan

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Glyphs Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

#### **Muni Soil**

*Range seeding:* Fair—droughty, too arid

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—cemented pan, area reclaim

*Daily cover for landfill:* Poor—cemented pan, small stones

*Shallow excavations:* Severe—cemented pan, cutbanks cave

*Local roads and streets:* Severe—cemented pan

*Pond reservoir areas:* Severe—cemented pan

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Grassval soil—VIIs, nonirrigated; Glyphs soil—IIIe, irrigated, and VIc,

nonirrigated; Muni soil—Ive, irrigated, and Vlls, nonirrigated

*Range site:* Grassval soil—028B011N; Glyphs and Muni soils—028B010N; Inclusion 1—028B010N; Inclusion 2—028B011N; Inclusion 3—028B003N

## 2110—Isolde-Davey association

*Positions on landscape:* Alluvial flats covered by eolian sand

### Composition

*Major components:*

Isolde fine sand, 4 to 30 percent slopes—60 percent

Davey fine sandy loam, 0 to 4 percent slopes—25 percent

*Contrasting inclusions:*

Orovada fine sandy loam, 0 to 4 percent slopes—6 percent

Creemon silt loam, 0 to 2 percent slopes—5 percent

Xerollic Camborthids, sandy-skeletal, mixed, mesic, 0 to 4 percent slopes—4 percent

### Characteristics of the Isolde Soil

*Classification:* Typic Torripsamments, mixed, mesic

*Positions on landscape:* Dunes overlying sand sheets

*Parent material:* Eolian sand derived from various kinds of rock

*Slope:* 4 to 30 percent

*Elevation:* 6,000 to 6,100 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 50 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Indian ricegrass, black greasewood, fourwing saltbush, hairy horsebrush

### Typical Profile

*Depth:* 0 to 6 inches

*Texture:* Fine sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 6 to 60 inches

*Texture:* Fine sand, sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

### Soil and Water Features

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Very rapid

*Available water capacity:* 3.6 to 5.4 inches

*Water-supplying capacity:* 6 inches

*Runoff:* Slow

*Hydrologic group:* A

*Erosion factors (upper layer):* K value—0.28; T value—5; wind erodibility group—1

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### Characteristics of the Davey Soil

*Classification:* Xerollic Camborthids, sandy, mixed, mesic

*Positions on landscape:* Sand sheets overlying alluvial flats

*Parent material:* Mixed alluvium

*Slope:* 0 to 4 percent

*Elevation:* 6,000 to 6,100 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bottlebrush squirreltail, needleandthread, Wyoming big sagebrush

### Typical Profile

*Depth:* 0 to 5 inches

*Texture:* Fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 5 to 14 inches

*Texture:* Fine sandy loam, sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 14 to 67 inches

*Texture:* Fine sand, loamy fine sand

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

### Soil and Water Features

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately rapid

*Available water capacity:* 4.2 to 5.7 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.24; T value—5;  
wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Indian ricegrass,  
Wyoming big sagebrush

#### **Inclusion 2**

*Classification:* Duric Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Fan skirts near areas of Playas

*Distinctive present vegetation:* Shadscale, bud  
sagebrush

#### **Inclusion 3**

*Classification:* Xerollic Camborthids, sandy-skeletal, mixed, mesic

*Positions on landscape:* Offshore bar remnants

*Distinctive present vegetation:* Wyoming big sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Isolde Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

#### **Davey Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Isolde Soil**

*Range seeding:* Poor—soil blowing, too sandy, droughty

*Roadfill:* Fair—slope

*Topsoil:* Poor—too sandy, slope

*Daily cover for landfill:* Poor—seepage, too sandy, slope

*Shallow excavations:* Severe—cutbanks cave, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage,  
piping

*Sand:* Probable source

*Gravel:* Improbable source—too sandy

#### **Davey Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Poor—thin layer

*Daily cover for landfill:* Poor—too sandy

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage,  
piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Isolde soil—VIIIs,  
nonirrigated; Davey soil—IIIs, irrigated, and VIc,  
nonirrigated

*Range site:* Isolde soil—027X023N; Davey soil—  
024X017N; Inclusion 1—028B010N; Inclusion 2—  
024X002N; Inclusion 3—028B010N

## **2540—Buffaran-Wieland association**

*Positions on landscape:* Fan piedmonts

### **Composition**

*Major components:*

Buffaran cobbly loam, 2 to 8 percent slopes—50  
percent

Wieland gravelly loam, 8 to 15 percent slopes—40  
percent

*Contrasting inclusions:*

Xerollic Camborthids, loamy-skeletal, mixed, mesic, 4 to  
8 percent slopes—6 percent

Xerollic Haplargids, fine, montmorillonitic, mesic, 2 to 8  
percent slopes—4 percent

### **Characteristics of the Buffaran Soil**

*Classification:* Xerollic Durargids, clayey,  
montmorillonitic, mesic, shallow

*Positions on landscape:* Summits and shoulder slopes of  
fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 2 to 8 percent

*Elevation:* 5,700 to 6,300 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Thurber needlegrass,  
bottlebrush squirreltail, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 15 percent cobbles, 15  
percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Cobbly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Depth:* 4 to 15 inches  
*Texture:* Clay, gravelly clay, gravelly clay loam  
*Structure:* Prismatic  
*Consistence:* Hard, firm  
*Reaction:* Mildly alkaline

*Depth:* 15 to 60 inches  
*Material:* Indurated hardpan  
*Structure:* Massive  
*Consistence:* Extremely hard, extremely firm

#### **Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 1.8 to 2.2 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.28; T value—1; wind erodibility group—7  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* High  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Characteristics of the Wieland Soil**

*Classification:* Durixerollic Haplargids, fine, montmorillonitic, mesic  
*Positions on landscape:* Side slopes of fan piedmont remnants  
*Parent material:* Mixed alluvium that includes loess and volcanic ash  
*Slope:* 8 to 15 percent  
*Elevation:* 5,700 to 6,300 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Indian ricegrass, needlegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 20 percent pebbles  
*Depth:* 0 to 8 inches  
*Texture:* Gravelly loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Mildly alkaline  
*Depth:* 8 to 20 inches  
*Texture:* Gravelly clay, clay  
*Structure:* Prismatic  
*Consistence:* Hard, firm  
*Reaction:* Moderately alkaline

*Depth:* 20 to 60 inches  
*Texture:* Gravelly loam, gravelly sandy loam  
*Structure:* Massive  
*Consistence:* Hard, firm  
*Reaction:* Moderately alkaline

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 6 to 9 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Medium  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.32; T value—5; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* High  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Xerollic Camborthids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Inset fans  
*Distinctive present vegetation:* Wyoming big sagebrush

##### **Inclusion 2**

*Classification:* Xerollic Haplargids, fine, montmorillonitic mesic  
*Positions on landscape:* Foot slopes of fan piedmont remnants  
*Distinctive present vegetation:* Wyoming big sagebrush

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Buffaran Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

##### **Wieland Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

##### **Buffaran Soil**

*Range seeding:* Poor—droughty, rooting depth  
*Roadfill:* Poor—cemented pan, low strength  
*Topsoil:* Poor—cemented pan, small stones  
*Daily cover for landfill:* Poor—cemented pan, hard to pack  
*Shallow excavations:* Severe—cemented pan

*Local roads and streets:* Severe—cemented pan, low strength

*Pond reservoir areas:* Severe—cemented pan

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Wieland Soil**

*Range seeding:* Poor—rooting depth

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Moderate—too clayey, slope

*Local roads and streets:* Severe—low strength, shrink-swell

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Buffaran soil—VIIIs, nonirrigated; Wieland soil—VIs, nonirrigated

*Range site:* Buffaran and Wieland soils—024X005N; Inclusions 1 and 2—024X005N

### **2541—Buffaran-Zoesta association**

*Positions on landscape:* Fan piedmonts

#### **Composition**

*Major components:*

Buffaran gravelly loam, 4 to 8 percent slopes, very stony—60 percent

Zoesta cobbly loam, 8 to 15 percent slopes—25 percent

*Contrasting inclusions:*

Xerollic Haplargids, fine-loamy, mixed, mesic, 30 to 50 percent slopes—7 percent

Xerollic Camborthids, loamy-skeletal, mixed, mesic, 4 to 15 percent slopes—5 percent

Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid, 4 to 15 percent slopes—3 percent

#### **Characteristics of the Buffaran Soil**

*Classification:* Xerollic Durargids, clayey, montmorillonitic, mesic, shallow

*Positions on landscape:* The lower summits and shoulder slopes of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 4 to 8 percent

*Elevation:* 6,200 to 6,700 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Thurber needlegrass, bottlebrush squirreltail, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 2 percent stones and boulders, 15 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Depth:* 4 to 15 inches

*Texture:* Clay, gravelly clay, gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 15 to 60 inches

*Material:* Indurated hardpan

*Structure:* Massive

*Consistence:* Extremely hard, extremely firm

#### **Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.8 to 2.2 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.32; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

#### **Characteristics of the Zoesta Soil**

*Classification:* Xerollic Paleargids, fine, montmorillonitic, frigid

*Positions on landscape:* The higher summits of fan piedmont remnants

*Parent material:* Alluvium and colluvium derived from various kinds of rock

*Slope:* 8 to 15 percent

*Elevation:* 6,200 to 6,800 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Bluebunch wheatgrass, needlegrass, low sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 15 percent cobbles, 15 percent pebbles

*Depth:* 0 to 7 inches

*Texture:* Cobbly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral

*Depth:* 7 to 23 inches  
*Texture:* Clay  
*Structure:* Prismatic  
*Consistence:* Very hard, very firm  
*Reaction:* Mildly alkaline  
*Depth:* 23 to 31 inches  
*Texture:* Gravelly clay, gravelly clay loam  
*Structure:* Prismatic  
*Consistence:* Very hard, very firm  
*Reaction:* Moderately alkaline

*Depth:* 31 to 60 inches  
*Texture:* Very gravelly loam, very gravelly clay loam  
*Structure:* Massive  
*Consistence:* Very hard, very firm  
*Reaction:* Moderately alkaline

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Very slow  
*Available water capacity:* 7 to 9 inches  
*Water-supplying capacity:* 10 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.20; T value—1; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* High  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Xerollic Haplargids, fine-loamy, mixed, mesic  
*Positions on landscape:* Side slopes of fan piedmont remnants  
*Distinctive present vegetation:* Needlegrass, bluebunch wheatgrass, big sagebrush

##### **Inclusion 2**

*Classification:* Xerollic Camborthids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Inset fans  
*Distinctive present vegetation:* Bluegrass, basin wildrye, basin big sagebrush

##### **Inclusion 3**

*Classification:* Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* Fan aprons  
*Distinctive present vegetation:* Needlegrass, bluebunch wheatgrass, basin big sagebrush

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Buffaran Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

##### **Zoesta Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

##### **Buffaran Soil**

*Range seeding:* Poor—droughty, rooting depth  
*Roadfill:* Poor—cemented pan, low strength  
*Topsoil:* Poor—cemented pan, small stones  
*Daily cover for landfill:* Poor—cemented pan, hard to pack  
*Shallow excavations:* Severe—cemented pan  
*Local roads and streets:* Severe—cemented pan, low strength  
*Pond reservoir areas:* Severe—cemented pan  
*Embankments, dikes, and levees:* Severe—thin layer  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

##### **Zoesta Soil**

*Range seeding:* Poor—rooting depth  
*Roadfill:* Fair—shrink-swell  
*Topsoil:* Poor—small stones, area reclaim  
*Daily cover for landfill:* Poor—small stones  
*Shallow excavations:* Moderate—too clayey, slope  
*Local roads and streets:* Severe—low strength, shrink-swell  
*Pond reservoir areas:* Severe—slope  
*Embankments, dikes, and levees:* Slight  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Buffaran soil—VIIIs, nonirrigated; Zoesta soil—IVs, irrigated, and VIs, nonirrigated  
*Range site:* Buffaran soil—024X005N; Zoesta soil—024X018N; Inclusion 1—024X035N; Inclusion 2—025X003N; Inclusion 3—025X014N

#### **2542—Buffaran-Chiara association**

*Positions on landscape:* Partial ballenas

### **Composition**

#### *Major components:*

Buffaran gravelly loam, 2 to 8 percent slopes—40 percent

Buffaran very gravelly fine sandy loam, 8 to 15 percent slopes—30 percent

Chiara very gravelly loam, 8 to 15 percent slopes—15 percent

#### *Contrasting inclusions:*

Wieland gravelly loam, 4 to 8 percent slopes—8 percent

Durixerollic Camborthids, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—7 percent

### **Characteristics of the Buffaran Soil, Gravelly**

*Classification:* Xerollic Durargids, clayey, montmorillonitic, mesic, shallow

*Positions on landscape:* Summits of partial ballenas

*Parent material:* Mixed alluvium

*Slope:* 2 to 8 percent

*Elevation:* 6,200 to 6,700 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Thurber needlegrass, Indian ricegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 15 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Depth:* 5 to 16 inches

*Texture:* Clay, gravelly clay, gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 16 to 27 inches

*Material:* Indurated hardpan

*Structure:* Massive

*Consistence:* Extremely hard, extremely firm

*Depth:* 27 to 60 inches

*Material:* Cemented hardpan

*Structure:* Platy

*Consistence:* Very hard, very firm

#### **Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.9 to 2.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.32; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Buffaran Soil, Very Gravelly**

*Classification:* Xerollic Durargids, clayey, montmorillonitic, mesic, shallow

*Positions on landscape:* Shoulder slopes and north-facing side slopes of partial ballenas

*Parent material:* Mixed alluvium

*Slope:* 8 to 15 percent

*Elevation:* 6,200 to 6,700 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Thurber needlegrass, Indian ricegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 15 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Very gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Depth:* 5 to 16 inches

*Texture:* Clay, gravelly clay, gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 16 to 27 inches

*Material:* Indurated hardpan

*Structure:* Massive

*Consistence:* Extremely hard, extremely firm

*Depth:* 27 to 60 inches

*Material:* Cemented hardpan

*Structure:* Platy

*Consistence:* Very hard, very firm

#### **Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.2 to 2.0 inches

*Water-supplying capacity:* 8 inches



*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—1;  
wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Chiara Soil**

*Classification:* Xerollic Durorthids, loamy, mixed, mesic, shallow

*Positions on landscape:* South-facing side slopes of partial ballenas

*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 8 to 15 percent

*Elevation:* 6,200 to 6,700 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

### **Typical Profile**

*Rock fragments on surface:* 5 percent cobbles, 40 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 4 to 13 inches

*Texture:* Silt loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 13 to 60 inches

*Material:* Indurated hardpan

*Structure:* Massive

*Consistence:* Extremely hard, extremely firm

### **Soil and Water Features**

*Depth to the hardpan:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 2.0 to 2.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—1;  
wind erodibility group—7

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durixerollic Haplargids, fine, montmorillonitic, mesic

*Positions on landscape:* Foot slopes of partial ballenas

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Inclusion 2**

*Classification:* Durixerollic Camborthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Wyoming big sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Buffaran Soil, Gravelly**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Buffaran Soil, Very Gravelly**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Chiara Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Buffaran Soil, Gravelly**

*Range seeding:* Poor—droughty, rooting depth

*Roadfill:* Poor—cemented pan, shrink-swell, low strength

*Topsoil:* Poor—cemented pan, too clayey, small stones

*Daily cover for landfill:* Poor—cemented pan, hard to pack

*Shallow excavations:* Severe—cemented pan

*Local roads and streets:* Severe—cemented pan, shrink-swell, low strength

*Pond reservoir areas:* Severe—cemented pan, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Buffaran Soil, Very Gravelly**

*Range seeding:* Poor—droughty, rooting depth, small stones

*Roadfill:* Poor—cemented pan, shrink-swell, low strength

*Topsoil:* Poor—cemented pan, too clayey, small stones

*Daily cover for landfill:* Poor—cemented pan, hard to pack

*Shallow excavations:* Severe—cemented pan  
*Local roads and streets:* Severe—cemented pan, shrink-swell, low strength  
*Pond reservoir areas:* Severe—cemented pan, slope  
*Embankments, dikes, and levees:* Severe—thin layer  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Chiara Soil**

*Range seeding:* Poor—droughty, small stones  
*Roadfill:* Poor—cemented pan  
*Topsoil:* Poor—cemented pan  
*Daily cover for landfill:* Poor—cemented pan  
*Shallow excavations:* Severe—cemented pan  
*Local roads and streets:* Severe—cemented pan  
*Pond reservoir areas:* Severe—cemented pan, slope  
*Embankments, dikes, and levees:* Severe—piping  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Buffaran and Chiara soils—VIIs, nonirrigated  
*Range site:* Buffaran and Chiara soils—028B010N; Inclusions 1 and 2—028B010N

### **2543—Buffaran-Spasprey-Allor association**

*Positions on landscape:* Fan piedmonts

#### **Composition**

*Major components:*  
 Buffaran gravelly loam, 2 to 8 percent slopes—35 percent  
 Spasprey gravelly fine sandy loam, 2 to 4 percent slopes—30 percent  
 Allor gravelly loam, 2 to 8 percent slopes—20 percent  
*Contrasting inclusions:*  
 Orovada fine sandy loam, 0 to 2 percent slopes—7 percent  
 Ricert very fine sandy loam, 0 to 2 percent slopes—4 percent  
 Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 2 to 8 percent slopes—4 percent

#### **Characteristics of the Buffaran Soil**

*Classification:* Xerollic Durargids, clayey, montmorillonitic, mesic, shallow  
*Positions on landscape:* The upper summits of fan piedmont remnants  
*Parent material:* Mixed alluvium  
*Slope:* 2 to 8 percent  
*Elevation:* 6,200 to 6,600 feet  
*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Thurber needlegrass, Indian ricegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 15 percent pebbles  
*Depth:* 0 to 5 inches  
*Texture:* Gravelly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Depth:* 5 to 16 inches  
*Texture:* Clay, gravelly clay, gravelly clay loam  
*Structure:* Prismatic  
*Consistence:* Hard, firm  
*Reaction:* Mildly alkaline  
*Depth:* 16 to 27 inches  
*Material:* Indurated hardpan  
*Structure:* Massive  
*Consistence:* Extremely hard, extremely firm  
*Depth:* 27 to 60 inches  
*Material:* Cemented hardpan  
*Structure:* Platy  
*Consistence:* Very hard, very firm

#### **Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 1.9 to 2.4 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.32; T value—1; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* High  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Characteristics of the Spasprey Soil**

*Classification:* Haploxerollic Durargids, fine-loamy, mixed, mesic  
*Positions on landscape:* The intermediate areas of fan piedmont remnants  
*Parent material:* Mixed alluvium  
*Slope:* 2 to 4 percent  
*Elevation:* 6,200 to 6,500 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Indian ricegrass,  
bluegrass, needlegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 5 to 26 inches

*Texture:* Clay loam, sandy clay loam

*Structure:* Prismatic

*Consistence:* Hard, friable

*Reaction:* Mildly alkaline

*Depth:* 26 to 33 inches

*Material:* Cemented hardpan

*Depth:* 33 to 60 inches

*Texture:* Fine sandy loam

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

### **Soil and Water Features**

*Depth to the hardpan:* 20 to 30 inches

*Depth to a seasonal high water table:* More than 60  
inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 4 to 5 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Slow

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.32; T value—3;  
wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Allor Soil**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed,  
mesic

*Positions on landscape:* The lower summits of fan  
piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 2 to 8 percent

*Elevation:* 6,200 to 6,600 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush,  
bluegrass, Indian ricegrass

### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 12 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 12 to 34 inches

*Texture:* Gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 34 to 60 inches

*Texture:* Gravelly loamy sand, very gravelly loamy sand

*Structure:* Massive

*Consistence:* Very hard, firm

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60  
inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 5.0 to 6.4 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.24; T value—5;  
wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durixerollic Camborthids, coarse-loamy,  
mixed, mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Inclusion 2**

*Classification:* Duric Natrargids, fine-loamy, mixed,  
mesic

*Positions on landscape:* Convex areas on the lower fan  
piedmont remnants

*Distinctive present vegetation:* Bottlebrush squirreltail,  
shadscale, bud sagebrush

#### **Inclusion 3**

*Classification:* Xeric Torriorthents, loamy-skeletal, mixed  
(calcareous), mesic

*Positions on landscape:* Fan drainageways  
*Distinctive present vegetation:* Wyoming big sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Buffaran Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Spasprey Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Allor Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Buffaran Soil**

*Range seeding:* Poor—droughty, rooting depth

*Roadfill:* Poor—cemented pan, shrink-swell, low strength

*Topsoil:* Poor—cemented pan, too clayey, small stones

*Daily cover for landfill:* Poor—cemented pan, hard to pack

*Shallow excavations:* Severe—cemented pan

*Local roads and streets:* Severe—cemented pan, shrink-swell, low strength

*Pond reservoir areas:* Severe—cemented pan

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Spasprey Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Fair—cemented pan, area reclaim, too clayey

*Daily cover for landfill:* Poor—cemented pan

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—shrink-swell, low strength, frost action

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage, piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Allor Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—frost action, shrink-swell

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Buffaran soil—VIIIs, nonirrigated; Spasprey soil—IIIs, irrigated, and VIs, nonirrigated; Allor soil—IIIs, irrigated, and VIs, nonirrigated

*Range site:* Buffaran, Spasprey, and Allor soils—028B010N; Inclusion 1—028B010N; Inclusion 2—028B017N; Inclusion 3—028B010N

## **2545—Buffaran-Pineval association**

*Positions on landscape:* Fan piedmonts

### **Composition**

*Major components:*

Buffaran gravelly loam, 4 to 15 percent slopes—70 percent

Pineval gravelly loam, 15 to 30 percent slopes—15 percent

*Contrasting inclusions:*

Xerollic Durargids, loamy-skeletal, mixed, mesic, 8 to 15 percent slopes—7 percent

Durixerollic Camborthids, loamy-skeletal, mixed, mesic, 4 to 15 percent slopes—5 percent

Durorthidic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 4 to 15 percent slopes—3 percent

### **Characteristics of the Buffaran Soil**

*Classification:* Xerollic Durargids, clayey, montmorillonitic, mesic, shallow

*Positions on landscape:* Summits and shoulder slopes of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 4 to 15 percent

*Elevation:* 6,200 to 6,500 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Thurber needlegrass, bottlebrush squirreltail, Indian ricegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 15 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Depth:* 5 to 16 inches  
*Texture:* Clay, gravelly clay, gravelly clay loam  
*Structure:* Prismatic  
*Consistence:* Hard, firm  
*Reaction:* Mildly alkaline

*Depth:* 16 to 27 inches  
*Material:* Indurated hardpan  
*Structure:* Massive  
*Consistence:* Extremely hard, extremely firm

*Depth:* 27 to 60 inches  
*Material:* Cemented hardpan  
*Structure:* Platy  
*Consistence:* Very hard, very firm

#### **Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 1.9 to 2.4 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.32; T value—1; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* High  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Characteristics of the Pineval Soil**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Side slopes of fan piedmont remnants  
*Parent material:* Mixed alluvium  
*Slope:* 15 to 30 percent  
*Elevation:* 6,200 to 6,500 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 10 percent pebbles  
*Depth:* 0 to 5 inches  
*Texture:* Gravelly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 5 to 11 inches  
*Texture:* Very gravelly loam, very gravelly clay loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 11 to 60 inches  
*Texture:* Extremely gravelly sandy loam, extremely gravelly loamy sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 3.2 to 4.4 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Medium  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.28; T value—5; wind erodibility group—6  
*Hazard of erosion:* By water—moderate; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Xerollic Durargids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Summits on the upper part of fan piedmont remnants  
*Distinctive present vegetation:* Wyoming big sagebrush

##### **Inclusion 2**

*Classification:* Durixerollic Camborthids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Inset fans  
*Distinctive present vegetation:* Wyoming big sagebrush

##### **Inclusion 3**

*Classification:* Durorthidic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic  
*Positions on landscape:* Inset fans near the front of mountains  
*Distinctive present vegetation:* Basin wildrye, bluegrass, basin big sagebrush

#### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Buffaran Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Pineval Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Buffaran Soil**

*Range seeding:* Poor—droughty, rooting depth

*Roadfill:* Poor—cemented pan, shrink-swell, low strength

*Topsoil:* Poor—cemented pan, too clayey, small stones

*Daily cover for landfill:* Poor—cemented pan, hard to pack

*Shallow excavations:* Severe—cemented pan

*Local roads and streets:* Severe—cemented pan, shrink-swell, low strength

*Pond reservoir areas:* Severe—cemented pan, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Pineval Soil**

*Range seeding:* Fair—too arid, erodes easily, small stones

*Roadfill:* Fair—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

### **Interpretive Groups**

*Land capability classification:* Buffaran soil—VII<sub>s</sub>, nonirrigated; Pineval soil—VI<sub>e</sub>, nonirrigated

*Range site:* Buffaran and Pineval soils—028B010N; Inclusions 1 and 2—028B010N; Inclusion 3—028B003N

### **2546—Buffaran-Spasprey-Locane association**

*Positions on landscape:* Foothills, fan piedmonts

### **Composition**

*Major components:*

Buffaran very gravelly fine sandy loam, 2 to 4 percent slopes—45 percent

Spasprey gravelly fine sandy loam, 4 to 8 percent slopes—25 percent

Locane gravelly loam, 8 to 15 percent slopes—15 percent

*Contrasting inclusions:*

Durixerollic Camborthids, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—10 percent

Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic, 2 to 4 percent slopes—5 percent

### **Characteristics of the Buffaran Soil**

*Classification:* Xerollic Durargids, clayey, montmorillonitic, mesic, shallow

*Positions on landscape:* The lower summits of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 6,400 to 6,700 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Thurber needlegrass, bottlebrush squirreltail, Indian ricegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 45 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Very gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Depth:* 5 to 16 inches

*Texture:* Clay, gravelly clay, gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 16 to 27 inches

*Material:* Indurated hardpan

*Structure:* Massive

*Consistence:* Extremely hard, extremely firm

*Depth:* 27 to 60 inches

*Material:* Cemented hardpan

*Structure:* Platy

*Consistence:* Very hard, very firm

### **Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.8 to 2.2 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—1;  
wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Spasprey Soil**

*Classification:* Haploxerollic Durargids, fine-loamy,  
mixed, mesic

*Positions on landscape:* The upper summits of fan  
piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 4 to 8 percent

*Elevation:* 6,200 to 6,500 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Indian ricegrass,  
bluegrass, needlegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 5 to 26 inches

*Texture:* Clay loam, sandy clay loam

*Structure:* Prismatic

*Consistence:* Hard, friable

*Reaction:* Mildly alkaline

*Depth:* 26 to 33 inches

*Material:* Cemented hardpan

*Depth:* 33 to 60 inches

*Texture:* Fine sandy loam

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

### **Soil and Water Features**

*Depth to the hardpan:* 20 to 30 inches

*Depth to a seasonal high water table:* More than 60  
inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 4 to 5 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.32; T value—3;  
wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Locane Soil**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal,  
montmorillonitic, frigid

*Positions on landscape:* Side slopes of foothills

*Parent material:* Residuum derived from shale and  
conglomerate

*Slope:* 8 to 15 percent

*Elevation:* 6,400 to 6,800 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Indian ricegrass,  
needlegrass, Wyoming big sagebrush

### **Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 6 to 14 inches

*Texture:* Very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 14 inches

*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60  
inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.7 to 2.1 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1;  
wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durixerollic Camborthids, loamy-skeletal,  
mixed, mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Inclusion 2**

*Classification:* Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic

*Positions on landscape:* Inset fans near the front of foothills

*Distinctive present vegetation:* Basin wildrye, bluegrass, basin big sagebrush

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Buffaran Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

##### **Spasprey Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

##### **Locane Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

##### **Buffaran Soil**

*Range seeding:* Poor—droughty, rooting depth, small stones

*Roadfill:* Poor—cemented pan, shrink-swell, low strength

*Topsoil:* Poor—cemented pan, too clayey, small stones

*Daily cover for landfill:* Poor—cemented pan, hard to pack

*Shallow excavations:* Severe—cemented pan

*Local roads and streets:* Severe—cemented pan, shrink-swell, low strength

*Pond reservoir areas:* Severe—cemented pan

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

##### **Spasprey Soil**

*Range seeding:* Fair—too arid, small stones

*Roadfill:* Good

*Topsoil:* Fair—cemented pan, area reclaim, too clayey

*Daily cover for landfill:* Poor—cemented pan

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—shrink-swell, low strength, frost action

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage, piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

##### **Locane Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones

*Daily cover for landfill:* Poor—depth to rock, small stones

*Shallow excavations:* Severe—depth to rock

*Local roads and streets:* Severe—depth to rock

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Buffaran and Locane soils—VIIIs, nonirrigated; Spasprey soil—IIIe, irrigated, and VIs, nonirrigated

*Range site:* Buffaran, Spasprey, and Locane soils—028B010N; Inclusion 1—028B010N; Inclusion 2—028B003N

#### **2547—Buffaran-Desatoya association**

*Positions on landscape:* Fan piedmonts

#### **Composition**

*Major components:*

Buffaran gravelly loam, 4 to 8 percent slopes—50 percent

Desatoya very gravelly loam, 8 to 15 percent slopes—35 percent

*Contrasting inclusions:*

Haploxerollic Durargids, fine-loamy, mixed, mesic, 4 to 8 percent slopes—8 percent

Aridic Argixerolls, fine-loamy, mixed, mesic, 4 to 8 percent slopes—6 percent

Jung very gravelly loam, 15 to 30 percent slopes—1 percent

#### **Characteristics of the Buffaran Soil**

*Classification:* Xerollic Durargids, clayey, montmorillonitic, mesic, shallow

*Positions on landscape:* The lower summits and south-facing side slopes of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 4 to 8 percent

*Elevation:* 6,200 to 6,400 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Thurber needlegrass, bottlebrush squirreltail, Indian ricegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 15 percent pebbles

*Depth:* 0 to 2 inches



*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 2 to 16 inches

*Texture:* Clay, gravelly clay, gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 16 to 27 inches

*Material:* Indurated hardpan

*Structure:* Massive

*Consistence:* Extremely hard, extremely firm

*Depth:* 27 to 60 inches

*Material:* Cemented hardpan

*Structure:* Platy

*Consistence:* Very hard, very firm

#### **Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.8 to 2.2 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.32; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

#### **Characteristics of the Desatoya Soil**

*Classification:* Durixerollic Haplargids, clayey over loamy-skeletal, montmorillonitic, mesic

*Positions on landscape:* The upper summits and north-facing side slopes of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 8 to 15 percent

*Elevation:* 6,200 to 6,400 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, needlegrass, Indian ricegrass, black sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 5 percent cobbles, 45 percent pebbles

*Depth:* 0 to 6 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 6 to 13 inches

*Texture:* Gravelly clay, gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 13 to 60 inches

*Texture:* Stratified extremely gravelly sandy loam to very gravelly loamy sand

*Structure:* Massive

*Consistence:* Hard, firm

*Reaction:* Strongly alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 4.0 to 5.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.10; T value—5; wind erodibility group—7

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Haploxerollic Durargids, fine-loamy, mixed, mesic

*Positions on landscape:* Fan aprons

*Distinctive present vegetation:* Wyoming big sagebrush

##### **Inclusion 2**

*Classification:* Aridic Argixerolls, fine-loamy, mixed, mesic

*Positions on landscape:* Foot slopes of fan piedmont remnants

*Distinctive present vegetation:* Wyoming big sagebrush

##### **Inclusion 3**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic

*Positions on landscape:* Foothill remnants

*Distinctive present vegetation:* Bluegrass, black sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Buffaran Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Desatoya Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Buffaran Soil**

*Range seeding:* Poor—droughty, rooting depth

*Roadfill:* Poor—cemented pan, shrink-swell, low strength

*Topsoil:* Poor—cemented pan, small stones

*Daily cover for landfill:* Poor—cemented pan, hard to pack

*Shallow excavations:* Severe—cemented pan

*Local roads and streets:* Severe—cemented pan, shrink-swell, low strength

*Pond reservoir areas:* Severe—cemented pan

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Desatoya Soil**

*Range seeding:* Poor—rooting depth, small stones

*Roadfill:* Fair—large stones

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Moderate—large stones, slope

*Local roads and streets:* Moderate—slope, frost action, large stones

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Buffaran and Desatoya soils—VIIs, nonirrigated

*Range site:* Buffaran soil—027X008N; Desatoya soil—027X032N; Inclusions 1 and 2—027X008N; Inclusion 3—027X032N

## **2548—Buffaran-Tenabo-Pineval association**

*Positions on landscape:* Fan piedmonts

### **Composition**

#### *Major components:*

Buffaran very gravelly fine sandy loam, 4 to 8 percent slopes—45 percent

Tenabo gravelly very fine sandy loam, 4 to 8 percent slopes—25 percent

Pineval gravelly fine sandy loam, 4 to 8 percent slopes—15 percent

#### *Contrasting inclusions:*

Durixerollic Haplargids, fine-loamy, mixed, mesic, 8 to 15 percent slopes—6 percent

Orovada fine sandy loam, 2 to 8 percent slopes—5 percent

Lithic Xerollic Haplargids, clayey, montmorillonitic, mesic, 4 to 15 percent slopes—4 percent

### **Characteristics of the Buffaran Soil**

*Classification:* Xerollic Durargids, clayey, montmorillonitic, mesic, shallow

*Positions on landscape:* The upper summits of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 4 to 8 percent

*Elevation:* 5,700 to 6,000 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Thurber needlegrass, bottlebrush squirreltail, Indian ricegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 45 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Very gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 5 to 16 inches

*Texture:* Clay, gravelly clay, gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 16 to 27 inches

*Material:* Indurated hardpan

*Structure:* Massive

*Consistence:* Extremely hard, extremely firm

*Depth:* 27 to 60 inches

*Material:* Cemented hardpan

*Structure:* Platy

*Consistence:* Very hard, very firm

### **Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.6 to 2.2 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—1; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Tenabo Soil**

*Classification:* Typic Nadurargids, loamy, mixed, mesic, shallow

*Positions on landscape:* The lower summits of fan piedmont remnants

*Parent material:* Thin loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 4 to 8 percent

*Elevation:* 5,700 to 6,000 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass

### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Gravelly very fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 4 to 15 inches

*Texture:* Clay loam, gravelly clay loam, silty clay loam

*Structure:* Prismatic

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

*Depth:* 15 to 28 inches

*Material:* Indurated hardpan

*Structure:* Platy

*Consistence:* Extremely hard, extremely firm

*Depth:* 28 to 60 inches

*Texture:* Stratified very gravelly sandy loam to extremely gravelly coarse sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

### **Soil and Water Features**

*Depth to the hardpan:* 9 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 2.5 to 2.9 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—moderate

*Potential for frost action:* Low

### **Characteristics of the Pineval Soil**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Foot slopes of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 4 to 8 percent

*Elevation:* 5,700 to 6,000 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 10 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 5 to 11 inches

*Texture:* Very gravelly loam, very gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 11 to 60 inches

*Texture:* Extremely gravelly sandy loam, extremely gravelly loamy sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 3.1 to 4.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* Side slopes of fan piedmont remnants

*Distinctive present vegetation:* Bottlebrush squirreltail, small rabbitbrush, black sagebrush

##### **Inclusion 2**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Indian ricegrass, Wyoming big sagebrush

##### **Inclusion 3**

*Classification:* Lithic Xerollic Haplargids, clayey, montmorillonitic, mesic

*Positions on landscape:* Low knolls

*Distinctive present vegetation:* Bottlebrush squirreltail, small rabbitbrush, black sagebrush

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Buffaran Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

##### **Tenabo Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

##### **Pineval Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

##### **Buffaran Soil**

*Range seeding:* Poor—droughty, rooting depth, small stones

*Roadfill:* Poor—cemented pan, shrink-swell, low strength

*Topsoil:* Poor—cemented pan, too clayey, small stones

*Daily cover for landfill:* Poor—cemented pan, hard to pack

*Shallow excavations:* Severe—cemented pan

*Local roads and streets:* Severe—cemented pan, shrink-swell, low strength

*Pond reservoir areas:* Severe—cemented pan

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

##### **Tenabo Soil**

*Range seeding:* Poor—too arid, droughty, excess sodium

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—cemented pan, small stones, too sandy

*Daily cover for landfill:* Poor—cemented pan, seepage, too sandy

*Shallow excavations:* Severe—cemented pan, cutbanks cave

*Local roads and streets:* Severe—cemented pan

*Pond reservoir areas:* Severe—seepage, cemented pan

*Embankments, dikes, and levees:* Severe—seepage, excess sodium, excess salt

*Sand:* Probable source

*Gravel:* Probable source

##### **Pineval Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

#### **Interpretive Groups**

*Land capability classification:* Buffaran soil—VII<sub>s</sub>, nonirrigated; Tenabo soil—IV<sub>e</sub>, irrigated, and VII<sub>s</sub>,

nonirrigated; Pineval soil—Ive, irrigated, and VIs, nonirrigated

*Range site:* Buffaran and Pineval soils—028B010N; Tenabo soil—024X002N; Inclusion 1—024X030N; Inclusion 2—028B010N; Inclusion 3—024X030N

## **2554—Laped-Hooplite-Osoll association**

*Positions on landscape:* Foothills

### **Composition**

*Major components:*

Laped very gravelly fine sandy loam, 8 to 15 percent slopes—40 percent

Hooplite very gravelly fine sandy loam, 8 to 15 percent slopes—30 percent

Osoll very gravelly fine sandy loam, 8 to 15 percent slopes—20 percent

*Contrasting inclusions:*

Rock outcrop—5 percent

Typic Durorthids, loamy, mixed, mesic, shallow, 8 to 15 percent slopes—5 percent

### **Characteristics of the Laped Soil**

*Classification:* Typic Durargids, loamy, mixed, mesic, shallow

*Positions on landscape:* Convex, lower side slopes of foothills

*Parent material:* Colluvium and residuum derived from tuff and andesite

*Slope:* 8 to 15 percent

*Elevation:* 5,900 to 6,200 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bottlebrush squirreltail, shadscale, bud sagebrush

### **Typical Profile**

*Rock fragments on surface:* 45 percent pebbles

*Depth:* 0 to 6 inches

*Texture:* Very gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 18 inches

*Texture:* Gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

*Depth:* 18 to 23 inches

*Material:* Indurated hardpan

### **Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches

*Depth to bedrock:* 20 to 30 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.8 to 2.3 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—1; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Hooplite Soil**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Convex, upper side slopes of foothills

*Parent material:* Residuum derived from rhyolitic rock

*Slope:* 8 to 15 percent

*Elevation:* 5,900 to 6,200 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bottlebrush squirreltail, black sagebrush

### **Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 45 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Very gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, firm

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 4 to 8 inches

*Texture:* Very gravelly loam, very gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 8 inches

*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 6 to 14 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 0.6 to 0.8 inch

*Water-supplying capacity:* 7 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—1; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Osoll Soil**

*Classification:* Typic Durorthids, loamy-skeletal, mixed, mesic, shallow

*Positions on landscape:* Concave toe slopes of foothills

*Parent material:* Colluvium that includes loess over residuum derived from various kinds of rock

*Slope:* 8 to 15 percent

*Elevation:* 5,900 to 6,200 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bottlebrush squirreltail, shadscale, bud sagebrush

### **Typical Profile**

*Rock fragments on surface:* 5 percent cobbles, 50 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Very gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 5 to 12 inches

*Texture:* Very gravelly loam, very gravelly fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 12 to 35 inches

*Material:* Indurated hardpan

*Structure:* Platy

*Consistence:* Extremely hard, extremely firm

*Depth:* 35 inches

*Texture:* Unweathered bedrock

### **Soil and Water Features**

*Depth to the hardpan:* 8 to 14 inches

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately rapid

*Available water capacity:* 0.6 to 1.0 inch

*Water-supplying capacity:* 7 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Positions on landscape:* Scattered knobs

*Distinctive present vegetation:* None

#### **Inclusion 2**

*Classification:* Typic Durorthids, loamy, mixed, mesic, shallow

*Positions on landscape:* Eroded, south-facing side slopes of foothills

*Distinctive present vegetation:* Shadscale, bud sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Laped Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

#### **Hooplite Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

#### **Osoll Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

### **Suitability and Limitations for Selected Uses**

#### **Laped Soil**

*Range seeding:* Poor—too arid, small stones, droughty

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—cemented pan, small stones

*Daily cover for landfill:* Poor—depth to rock, small stones

*Shallow excavations:* Severe—depth to rock, cemented pan

*Local roads and streets:* Severe—cemented pan

*Pond reservoir areas:* Severe—cemented pan, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Hooplite Soil**

*Range seeding:* Poor—too arid, droughty, small stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones

*Daily cover for landfill:* Poor—depth to rock

*Shallow excavations:* Severe—depth to rock

*Local roads and streets:* Severe—depth to rock

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Osoll Soil**

*Range seeding:* Poor—droughty, small stones, too arid

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—cemented pan, small stones

*Daily cover for landfill:* Poor—depth to rock, small stones

*Shallow excavations:* Severe—depth to rock, cemented pan

*Local roads and streets:* Severe—cemented pan

*Pond reservoir areas:* Severe—cemented pan, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Laped, Hooplite, and Osoll soils—VIIIs, nonirrigated

*Range site:* Laped and Osoll soils—024X002N; Hooplite soil—028B016N; Inclusion 1—none; Inclusion 2—024X002N

## **2555—Laped-Colbar association**

*Positions on landscape:* Foothills

### **Composition**

*Major components:*

Laped very cobbly loam, 15 to 30 percent slopes—55 percent

Colbar very cobbly loam, 30 to 50 percent slopes—30 percent

*Contrasting inclusions:*

Typic Haplargids, fine, montmorillonitic, mesic, 2 to 8 percent slopes—8 percent

Typic Durargids, loamy-skeletal, mixed, mesic, 30 to 50 percent slopes—5 percent

Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow, 30 to 50 percent slopes—2 percent

## **Characteristics of the Laped Soil**

*Classification:* Typic Durargids, loamy, mixed, mesic, shallow

*Positions on landscape:* Convex crests, shoulder slopes, and south-facing side slopes of foothills

*Parent material:* Colluvium and residuum derived from tuff and andesite

*Slope:* 15 to 30 percent

*Elevation:* 5,200 to 6,400 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bottlebrush squirreltail, shadscale, bud sagebrush

### **Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 10 percent pebbles

*Depth:* 0 to 6 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 18 inches

*Texture:* Gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Moderately alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

*Depth:* 18 to 23 inches

*Material:* Indurated hardpan

*Depth:* 23 inches

*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches

*Depth to bedrock:* 20 to 30 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 2.2 to 3.5 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—7

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Colbar Soil**

*Classification:* Xerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* Concave, north-facing side slopes of foothills

*Parent material:* Colluvium over residuum derived from rhyolite and andesite

*Slope:* 30 to 50 percent

*Elevation:* 5,200 to 6,400 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Needlegrass, bluegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 20 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 3 to 22 inches

*Texture:* Cobbly loam, gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 22 to 26 inches

*Texture:* Gravelly loam, cobbly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 26 inches

*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 3.3 to 3.8 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.10; T value—2; wind erodibility group—8

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Typic Haplargids, fine, montmorillonitic, mesic

*Positions on landscape:* Colluvial fans between hills

*Distinctive present vegetation:* Shadscale, bud sagebrush

#### **Inclusion 2**

*Classification:* Typic Durargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Concave, south-facing side slopes of foothills

*Distinctive present vegetation:* Shadscale, Wyoming big sagebrush

#### **Inclusion 3**

*Classification:* Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow

*Positions on landscape:* Concave, eroded side slopes of hills

*Distinctive present vegetation:* Small rabbitbrush, Wyoming big sagebrush, galleta

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Laped Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

#### **Colbar Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Laped Soil**

*Range seeding:* Poor—large stones, droughty, too arid

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—cemented pan, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, slope

*Shallow excavations:* Severe—depth to rock, cemented pan, slope

*Local roads and streets:* Severe—cemented pan, slope

*Pond reservoir areas:* Severe—cemented pan, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines



**Colbar Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—large stones, slope

*Daily cover for landfill:* Poor—depth to rock, large stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—seepage, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Laped and Colbar soils—Vlls, nonirrigated

*Range site:* Laped soil—024X002N; Colbar soil—024X005N; Inclusion 1—024X002N; Inclusion 2—024X026N; Inclusion 3—024X045N

**2570—Colbar-Atlow-Burrita association**

*Positions on landscape:* Mountains

**Composition**

*Major components:*

Colbar gravelly loam, 15 to 30 percent slopes—50 percent

Atlow very cobbly loam, 15 to 30 percent slopes—20 percent

Burrita very cobbly loam, 30 to 50 percent slopes—15 percent

*Contrasting inclusions:*

Burrita very cobbly loam, 4 to 8 percent slopes—7 percent

Rock outcrop—3 percent

Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, shallow, 30 to 50 percent slopes—3 percent

Lithic Haplargids, loamy-skeletal, mixed, mesic, 15 to 30 percent slopes—2 percent

**Characteristics of the Colbar Soil**

*Classification:* Xerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* Concave east-, west-, and lower south-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from rhyolite and andesite

*Slope:* 15 to 30 percent

*Elevation:* 6,000 to 6,600 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Needlegrass, bluegrass, Wyoming big sagebrush

**Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 6 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Depth:* 6 to 16 inches

*Texture:* Cobbly loam, gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Depth:* 16 to 21 inches

*Texture:* Gravelly loam, cobbly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Depth:* 21 inches

*Material:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 3.3 to 3.8 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.24; T value—2; wind erodibility group—6

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

**Characteristics of the Atlow Soil**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Shoulder slopes and north-facing side slopes of mountains

*Parent material:* Residuum derived from chert, shale, and altered rhyolitic tuff

*Slope:* 15 to 30 percent

*Elevation:* 6,000 to 6,600 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 46 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Black sagebrush, bluegrass, Indian ricegrass

**Typical Profile**

*Rock fragments on surface:* 20 percent cobbles, 20 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 3 to 14 inches

*Texture:* Very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 14 inches

*Texture:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.1 to 1.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

**Characteristics of the Burrita Soil**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic

*Positions on landscape:* Convex, upper, south-facing side slopes of mountains

*Parent material:* Residuum derived from interbedded chert, quartzite, and sandstone

*Slope:* 30 to 50 percent

*Elevation:* 6,000 to 6,500 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Needlegrass, bottlebrush squirreltail, Wyoming big sagebrush

**Typical Profile**

*Rock fragments on surface:* 25 percent cobbles, 30 percent pebbles

*Depth:* 0 to 7 inches

*Texture:* Very cobbly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Depth:* 7 to 14 inches

*Texture:* Very cobbly clay, very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, firm

*Reaction:* Moderately alkaline

*Depth:* 14 inches

*Material:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.2 to 1.5 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

**Contrasting Inclusions****Inclusion 1**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic

*Positions on landscape:* Crests of mountains

*Distinctive present vegetation:* Wyoming big sagebrush

**Inclusion 2**

*Positions on landscape:* Scattered knobs

*Distinctive present vegetation:* None

**Inclusion 3**

*Classification:* Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, shallow

*Positions on landscape:* Erosional balloons

*Distinctive present vegetation:* Utah juniper, Wyoming big sagebrush

**Inclusion 4**

*Classification:* Lithic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Convex toe slopes of mountains

*Distinctive present vegetation:* Shadscale, bud sagebrush

**Major Current Uses**

Livestock grazing, wildlife habitat

### ***Suitability for Wildlife Habitat Elements***

#### **Colbar Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Atlow Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Burrita Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### ***Suitability and Limitations for Selected Uses***

#### **Colbar Soil**

*Range seeding:* Fair—too arid, droughty

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, large stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—seepage, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Atlow Soil**

*Range seeding:* Poor—droughty, large stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Burrita Soil**

*Range seeding:* Poor—droughty, large stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### ***Interpretive Groups***

*Land capability classification:* Colbar soil—VIe, nonirrigated; Atlow and Burrita soils—VIIc, nonirrigated

*Range site:* Colbar and Burrita soils—024X005N; Atlow soil—024X030N; Inclusion 1—024X005N; Inclusion 2—none; Inclusion 3—024X002N; Inclusion 4—025X062N

### **2603—Grina-Genaw association**

*Positions on landscape:* Rolling hills

#### ***Composition***

*Major components:*

Grina gravelly loam, 15 to 30 percent slopes—45 percent

Genaw gravelly loam, 15 to 30 percent slopes—40 percent

*Contrasting inclusions:*

Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic, 4 to 15 percent slopes—7 percent

Aridic Haploxerolls, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—5 percent

Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic, 30 to 50 percent slopes—3 percent

#### ***Characteristics of the Grina Soil***

*Classification:* Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow

*Positions on landscape:* Convex, eroded side slopes of hills

*Parent material:* Residuum derived from sedimentary rock

*Slope:* 15 to 30 percent

*Elevation:* 5,900 to 6,300 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, Wyoming big sagebrush, Utah juniper, singleleaf pinyon, ephedra

*Site index for Utah juniper:* 30

#### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 5 to 14 inches

*Texture:* Silt loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 14 inches

*Material:* Weathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.8 to 2.1 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—5

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Genaw Soil**

*Classification:* Xerollic Haplargids, loamy, mixed, mesic, shallow

*Positions on landscape:* Convex, stable side slopes of hills

*Parent material:* Loess mantle over residuum derived from tuffaceous sediment

*Slope:* 15 to 30 percent

*Elevation:* 5,900 to 6,200 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, Wyoming big sagebrush, singleleaf pinyon

#### **Typical Profile**

*Rock fragments on surface:* 25 percent pebbles

*Depth:* 0 to 6 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 11 inches

*Texture:* Gravelly loam, gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 11 to 16 inches

*Texture:* Very gravelly loam

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 16 inches

*Material:* Weathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 1.9 to 2.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Crests of hills

*Distinctive present vegetation:* Wyoming big sagebrush

##### **Inclusion 2**

*Classification:* Aridic Haploxerolls, loamy-skeletal, mixed, mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Basin wildrye, rubber rabbitbrush

##### **Inclusion 3**

*Classification:* Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic

*Positions on landscape:* Concave, eroded side slopes of hills

*Distinctive present vegetation:* Bluegrass, small rabbitbrush, Wyoming big sagebrush

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Grina Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Fair

#### **Genaw Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

##### **Grina Soil**

*Range seeding:* Poor—droughty.

*Roadfill:* Poor—depth to rock, low strength, slope

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—low strength, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

##### **Genaw Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small

stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Grina and Genaw soils—  
Vile, nonirrigated

*Range site:* Grina soil—025X059N; Genaw soil—  
028B010N; Inclusion 1—028B010N; Inclusion 2—  
028B003N; Inclusion 3—024X035N

### **2640—Rasille-Kelk association**

*Positions on landscape:* Inset fans dissecting fan skirts

#### **Composition**

*Major components:*

Rasille silt loam, gravelly substratum, 0 to 2 percent  
slopes—45 percent

Kelk silt loam, occasionally flooded, 0 to 2 percent  
slopes—40 percent

*Contrasting inclusions:*

Batan silt loam, 0 to 2 percent slopes—8 percent

Broyles very fine sandy loam, 0 to 2 percent slopes—4  
percent

Wendane silt loam, frequently flooded, 0 to 2 percent  
slopes—3 percent

### **Characteristics of the Rasille Soil**

*Classification:* Durixerollic Camborthids, coarse-silty,  
mixed, mesic

*Positions on landscape:* Inset fans at margins of fan  
skirts and alluvial flats

*Parent material:* Silty alluvium derived from loess and  
various kinds of rock

*Slope:* 0 to 2 percent

*Elevation:* 5,200 to 5,400 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bottlebrush squirreltail,  
Indian ricegrass, needlegrass, Wyoming big  
sagebrush

#### **Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 15 inches

*Texture:* Silt loam

*Structure:* Prismatic

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 15 to 41 inches

*Texture:* Silt loam, very fine sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

*Depth:* 41 to 60 inches

*Texture:* Stratified fine sandy loam to very gravelly  
coarse sand

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60  
inches

*Frequency of flooding:* Rare

*Permeability:* Moderate

*Available water capacity:* 7.6 to 9.3 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.55; T value—5;  
 wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

### **Characteristics of the Kelk Soil**

*Classification:* Durixerollic Camborthids, fine-silty, mixed, mesic  
*Positions on landscape:* Inset fans  
*Parent material:* Loess that includes volcanic ash, mixed alluvium  
*Slope:* 0 to 2 percent  
*Elevation:* 5,200 to 5,400 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Basin big sagebrush, basin wildrye, rubber rabbitbrush, black greasewood

### **Typical Profile**

*Depth:* 0 to 14 inches  
*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5  
*Depth:* 14 to 51 inches  
*Texture:* Silt loam  
*Structure:* Massive  
*Consistence:* Hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 5 to 13  
*Depth:* 51 to 60 inches  
*Texture:* Silt loam  
*Structure:* Massive  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 5 to 13

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* Occasional for brief to long periods in February through June  
*Permeability:* Slow  
*Available water capacity:* 10 to 12 inches  
*Water-supplying capacity:* 8 inches

*Runoff:* Slow  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.55; T value—5;  
 wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic  
*Positions on landscape:* Alluvial flat remnants  
*Distinctive present vegetation:* Shadscale, black greasewood

#### **Inclusion 2**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Fan skirt margins  
*Distinctive present vegetation:* Shadscale, bud sagebrush

#### **Inclusion 3**

*Classification:* Aeris Halaquepts, fine-silty, mixed (calcareous), mesic  
*Positions on landscape:* Alluvial flats  
*Distinctive present vegetation:* Black greasewood, basin wildrye, rubber rabbitbrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Rasille Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### **Kelk Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Rasille Soil**

*Range seeding:* Fair—too arid  
*Roadfill:* Good  
*Topsoil:* Fair—area reclaim, excess salt  
*Daily cover for landfill:* Fair—thin layer  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Moderate—flooding, frost action  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—piping  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Kelk Soil**

*Range seeding:* Fair—too arid, excess salt

*Roadfill:* Poor—low strength  
*Topsoil:* Good  
*Daily cover for landfill:* Good  
*Shallow excavations:* Moderate—flooding  
*Local roads and streets:* Severe—low strength, flooding  
*Pond reservoir areas:* Moderate—seepage  
*Embankments, dikes, and levees:* Severe—piping  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Rasille soil—IIc, irrigated, and VIc, nonirrigated; Kelk soil—IIw, irrigated, and VIw, nonirrigated  
*Range site:* Rasille soil—028B010N; Kelk soil—024X006N; Inclusion 1—024X003N; Inclusion 2—024X002N; Inclusion 3—024X007N

## **2672—Zoesta Variant-Jung-Trunk association**

*Positions on landscape:* Foothills

### **Composition**

*Major components:*

Zoesta Variant gravelly loam, 15 to 30 percent slopes—35 percent  
 Jung very cobbly fine sandy loam, 8 to 15 percent slopes—30 percent  
 Trunk cobbly loam, 30 to 50 percent slopes—20 percent  
*Contrasting inclusions:*  
 Aridic Argixerolls, fine, montmorillonitic, frigid, 30 to 50 percent slopes—8 percent  
 Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 50 to 75 percent slopes—5 percent  
 Rock outcrop—2 percent

### **Characteristics of the Zoesta Variant Soil**

*Classification:* Xerollic Paleargids, fine, montmorillonitic, mesic

*Positions on landscape:* Convex side slopes of foothills  
*Parent material:* Colluvium over residuum derived from metavolcanic rock

*Slope:* 15 to 30 percent

*Elevation:* 5,800 to 6,200 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bottlebrush squirreltail, needlegrass, black sagebrush

### **Typical Profile**

*Rock fragments on surface:* 5 percent cobbles, 45 percent pebbles

*Depth:* 0 to 8 inches  
*Texture:* Gravelly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, friable  
*Reaction:* Neutral  
*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 8 to 27 inches  
*Texture:* Clay  
*Structure:* Prismatic  
*Consistence:* Very hard, very firm  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 27 to 36 inches  
*Texture:* Clay, clay loam  
*Structure:* Subangular blocky  
*Consistence:* Hard, firm  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 36 to 60 inches  
*Texture:* Gravelly loam, gravelly sandy loam  
*Structure:* Massive  
*Consistence:* Very hard, firm  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 8 millimhos per centimeter

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Very slow

*Available water capacity:* 6 to 8 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.28; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Jung Soil**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic

*Positions on landscape:* Convex crests and shoulder slopes of foothills

*Parent material:* Residuum derived from volcanic and metavolcanic rock

*Slope:* 8 to 15 percent

*Elevation:* 5,800 to 6,200 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, Indian ricegrass, black sagebrush, small rabbitbrush

#### **Typical Profile**

*Rock fragments on surface:* 25 percent cobbles, 20 percent pebbles

*Depth:* 0 to 8 inches

*Texture:* Very cobbly fine sandy loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 8 to 19 inches

*Texture:* Very cobbly clay

*Structure:* Prismatic

*Consistence:* Very hard, firm

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 19 inches

*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.6 to 2.2 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

#### **Characteristics of the Trunk Soil**

*Classification:* Xerollic Haplargids, fine, montmorillonitic, mesic

*Positions on landscape:* Slightly concave, west-facing, upper side slopes of foothills

*Parent material:* Colluvium and residuum derived from quartzite and chert

*Slope:* 30 to 50 percent

*Elevation:* 5,800 to 6,200 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, bottlebrush squirreltail, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 15 percent cobbles, 10 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Cobbly loam

*Structure:* Granular

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 3 to 30 inches

*Texture:* Gravelly clay, gravelly clay loam

*Structure:* Prismatic

*Consistence:* Very hard, very firm

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 30 inches

*Texture:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Very slow

*Available water capacity:* 3 to 4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—2; wind erodibility group—6

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Aridic Argixerolls, fine, montmorillonitic, frigid

*Positions on landscape:* The upper, concave, north-facing side slopes of foothills

*Distinctive present vegetation:* Singleleaf pinyon, Utah juniper, mountain big sagebrush

##### **Inclusion 2**

*Classification:* Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic

*Positions on landscape:* Convex, eroded side slopes of foothills

*Distinctive present vegetation:* Indian ricegrass, Wyoming big sagebrush, shadscale

##### **Inclusion 3**

*Positions on landscape:* Scattered peaks

*Distinctive present vegetation:* None



### Major Current Uses

Livestock grazing, wildlife habitat

### Suitability for Wildlife Habitat Elements

#### Zoesta Variant Soil

Wild herbaceous plants (nonirrigated): Fair

Shrubs (nonirrigated): Fair

#### Jung Soil

Wild herbaceous plants (nonirrigated): Fair

Shrubs (nonirrigated): Fair

#### Trunk Soil

Wild herbaceous plants (nonirrigated): Fair

Shrubs (nonirrigated): Fair

### Suitability and Limitations for Selected Uses

#### Zoesta Variant Soil

Range seeding: Poor—rooting depth

Roadfill: Fair—slope

Topsoil: Poor—small stones, slope

Daily cover for landfill: Poor—too clayey, hard to pack, slope

Shallow excavations: Severe—slope

Local roads and streets: Severe—low strength, shrink-swell, slope

Pond reservoir areas: Severe—slope

Embankments, dikes, and levees: Severe—hard to pack

Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines

#### Jung Soil

Range seeding: Poor—large stones, droughty

Roadfill: Poor—depth to rock

Topsoil: Poor—depth to rock, small stones, too clayey

Daily cover for landfill: Poor—depth to rock, small stones

Shallow excavations: Severe—depth to rock

Local roads and streets: Severe—depth to rock

Pond reservoir areas: Severe—depth to rock, slope

Embankments, dikes, and levees: Severe—large stones

Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines

#### Trunk Soil

Range seeding: Poor—rooting depth, erodes easily

Roadfill: Poor—depth to rock, low strength, slope

Topsoil: Poor—small stones, slope

Daily cover for landfill: Poor—depth to rock, hard to pack, small stones

Shallow excavations: Severe—depth to rock, slope

Local roads and streets: Severe—low strength, slope, shrink-swell

Pond reservoir areas: Severe—slope

Embankments, dikes, and levees: Severe—thin layer

Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines

### Interpretive Groups

*Land capability classification:* Zoesta Variant soil—VIIe, nonirrigated; Jung and Trunk soils—VIIs, nonirrigated

*Range site:* Zoesta Variant and Jung soils—024X030N; Trunk soil—024X005N; Inclusion 1—025X062N; Inclusion 2—024X045N; Inclusion 3—none

### 2681—Tessfive-Puett-Grina association

*Positions on landscape:* Dissected, rolling hills

### Composition

#### Major components:

Tessfive gravelly loam, 8 to 30 percent slopes—40 percent

Puett gravelly sandy loam, 15 to 50 percent slopes—25 percent

Grina gravelly loam, eroded, 15 to 30 percent slopes—20 percent

#### Contrasting inclusions:

Orovada gravelly very fine sandy loam, 2 to 8 percent slopes—6 percent

Unsel Variant very gravelly loam, 15 to 30 percent slopes—5 percent

Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 2 to 8 percent slopes—4 percent

### Characteristics of the Tessfive Soil

*Classification:* Lithic Xeric Torriorthents, loamy, mixed (calcareous), mesic

*Positions on landscape:* Convex, rolling crests and upper side slopes of hills

*Parent material:* Residuum derived from tuffaceous sediment that includes loess

*Slope:* 8 to 30 percent

*Elevation:* 5,300 to 5,700 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Indian ricegrass, bluegrass, black sagebrush

### Typical Profile

*Rock fragments on surface:* 35 percent pebbles

*Depth:* 0 to 6 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 6 to 16 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 16 inches

*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 1.8 to 2.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—5

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Puett Soil**

*Classification:* Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow

*Positions on landscape:* Convex, eroded side slopes of hills

*Parent material:* Residuum derived from tuff and sandstone

*Slope:* 15 to 50 percent

*Elevation:* 5,300 to 5,700 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, Wyoming big sagebrush, Indian ricegrass

#### **Typical Profile**

*Rock fragments on surface:* 25 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Gravelly sandy loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 4 to 15 inches

*Texture:* Coarse sandy loam, sandy loam, gravelly loam

*Structure:* Massive

*Consistence:* Soft, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 15 inches

*Material:* Weathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately rapid

*Available water capacity:* 1.5 to 2.5 inches

*Water-supplying capacity:* 6 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—1; wind erodibility group—4

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Grina Soil**

*Classification:* Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow

*Positions on landscape:* Concave, lower, rolling side slopes of hills

*Parent material:* Residuum derived from sedimentary rock

*Slope:* 15 to 30 percent

*Elevation:* 5,300 to 5,700 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, Wyoming big sagebrush, Utah juniper, singleleaf pinyon

*Site index for Utah juniper:* 18

#### **Typical Profile**

*Rock fragments on surface:* 20 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 3 to 14 inches

*Texture:* Silt loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 14 inches

*Material:* Weathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 1.8 to 2.1 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.24; T value—1;  
 wind erodibility group—5  
*Hazard of erosion:* By water—moderate; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Inset fans dissecting hills  
*Distinctive present vegetation:* Wyoming big sagebrush, bluegrass

#### **Inclusion 2**

*Classification:* Duric Haplargids, fine-loamy, mixed, mesic  
*Positions on landscape:* Convex, south-facing side slopes of hills  
*Distinctive present vegetation:* Shadscale, bud sagebrush

#### **Inclusion 3**

*Classification:* Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic  
*Positions on landscape:* Areas adjacent to channels  
*Distinctive present vegetation:* Wyoming big sagebrush, spiny hopsage

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Tessfive Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### **Puett Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### **Grina Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Coniferous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Tessfive Soil**

*Range seeding:* Poor—droughty  
*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, slope  
*Daily cover for landfill:* Poor—depth to rock, small stones, slope  
*Shallow excavations:* Severe—depth to rock, slope  
*Local roads and streets:* Severe—slope  
*Pond reservoir areas:* Severe—depth to rock, slope  
*Embankments, dikes, and levees:* Severe—thin layer  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Puett Soil**

*Range seeding:* Poor—droughty, too arid  
*Roadfill:* Poor—depth to rock, slope  
*Topsoil:* Poor—depth to rock, small stones, slope  
*Daily cover for landfill:* Poor—depth to rock, slope  
*Shallow excavations:* Severe—depth to rock, slope  
*Local roads and streets:* Severe—slope  
*Pond reservoir areas:* Severe—depth to rock, slope  
*Embankments, dikes, and levees:* Severe—seepage, piping  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Grina Soil**

*Range seeding:* Poor—droughty  
*Roadfill:* Poor—depth to rock, low strength, slope  
*Topsoil:* Poor—depth to rock, small stones, slope  
*Daily cover for landfill:* Poor—depth to rock, slope  
*Shallow excavations:* Severe—depth to rock, slope  
*Local roads and streets:* Severe—low strength, slope  
*Pond reservoir areas:* Severe—depth to rock, slope  
*Embankments, dikes, and levees:* Severe—thin layer  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Tessfive, Puett, and Grina soils—VIIe, nonirrigated

*Range site:* Tessfive soil—024X030N; Puett soil—025X025N; Grina soil—025X059N; Inclusion 1—028B010N; Inclusion 2—024X002N; Inclusion 3—024X020N

### **2683—Tessfive-Genaw-Orovada association**

*Positions on landscape:* Dissected, rolling hills

### **Composition**

#### **Major components:**

Tessfive gravelly loam, 15 to 30 percent slopes—35 percent  
 Genaw gravelly loam, 15 to 30 percent slopes—35 percent  
 Orovada fine sandy loam, 2 to 8 percent slopes—15 percent

*Contrasting inclusions:*

Xerollic Durargids, loamy, mixed, mesic, shallow, 4 to 15 percent slopes—5 percent

Puett fine sandy loam, 15 to 30 percent slopes—5 percent

Duric Natrargids, loamy-skeletal, mixed, mesic, 15 to 50 percent slopes—5 percent

**Characteristics of the Tessfive Soil**

*Classification:* Lithic Xeric Torriorthents, loamy, mixed (calcareous), mesic

*Positions on landscape:* Convex, higher, north-facing crests and side slopes of rolling hills

*Parent material:* Residuum derived from tuffaceous sediment that includes loess

*Slope:* 15 to 30 percent

*Elevation:* 5,400 to 5,800 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Indian ricegrass, bluegrass, black sagebrush

**Typical Profile**

*Rock fragments on surface:* 35 percent pebbles

*Depth:* 0 to 6 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 16 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 16 inches

*Texture:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 1.8 to 2.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—5

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

**Characteristics of the Genaw Soil**

*Classification:* Xerollic Haplargids, loamy, mixed, mesic, shallow

*Positions on landscape:* Slightly concave side slopes of rolling hills

*Parent material:* Loess mantle over residuum derived from tuffaceous sediment

*Slope:* 15 to 30 percent

*Elevation:* 5,400 to 5,800 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, Wyoming big sagebrush

**Typical Profile**

*Rock fragments on surface:* 25 percent pebbles

*Depth:* 0 to 6 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 11 inches

*Texture:* Gravelly loam, gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 11 to 16 inches

*Texture:* Very gravelly loam

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 16 inches

*Material:* Weathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 1.9 to 2.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1;  
wind erodibility group—6

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Orovada Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Inset fans dissecting rolling hills

*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 2 to 8 percent

*Elevation:* 5,400 to 5,800 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

### **Typical Profile**

*Depth:* 0 to 8 inches

*Texture:* Fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 8 to 20 inches

*Texture:* Fine sandy loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 20 to 65 inches

*Texture:* Stratified fine sandy loam to silt loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Rare

*Permeability:* Moderate

*Available water capacity:* 8 to 10 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.43; T value—5;  
wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Xerollic Durargids, loamy, mixed, mesic, shallow

*Positions on landscape:* Convex crests of rolling hills

*Distinctive present vegetation:* Black sagebrush

#### **Inclusion 2**

*Classification:* Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow

*Positions on landscape:* Erosional balloons

*Distinctive present vegetation:* Indian ricegrass, Wyoming big sagebrush, black sagebrush

#### **Inclusion 3**

*Classification:* Duric Natrargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Convex, south-facing side slopes of hills

*Distinctive present vegetation:* Indian ricegrass, shadscale, bud sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Tessfiv Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Genaw Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Orovada Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Tessfiv Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand*: Improbable source—excess fines  
*Gravel*: Improbable source—excess fines

#### **Genaw Soil**

*Range seeding*: Poor—droughty  
*Roadfill*: Poor—depth to rock  
*Topsoil*: Poor—depth to rock, small stones, slope  
*Daily cover for landfill*: Poor—depth to rock, small stones, slope  
*Shallow excavations*: Severe—depth to rock, slope  
*Local roads and streets*: Severe—slope  
*Pond reservoir areas*: Severe—depth to rock, slope  
*Embankments, dikes, and levees*: Severe—thin layer  
*Sand*: Improbable source—excess fines  
*Gravel*: Improbable source—excess fines

#### **Orovada Soil**

*Range seeding*: Fair—too arid  
*Roadfill*: Good  
*Topsoil*: Fair—small stones, thin layer  
*Daily cover for landfill*: Good  
*Shallow excavations*: Slight  
*Local roads and streets*: Moderate—frost action, flooding  
*Pond reservoir areas*: Moderate—seepage, slope  
*Embankments, dikes, and levees*: Severe—piping  
*Sand*: Improbable source—excess fines  
*Gravel*: Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification*: Tessfive and Genaw soils—VIIe, nonirrigated; Orovada soil—IIIe, irrigated, and VIc, nonirrigated  
*Range site*: Tessfive soil—024X030N; Genaw and Orovada soils—028B010N; Inclusion 1—028B011N; Inclusion 2—025X025N; Inclusion 3—028B017N

### **2684—Tessfive-Perlor-Orovada association**

*Positions on landscape*: Dissected, rolling hills

#### **Composition**

##### **Major components:**

Tessfive gravelly loam, 2 to 8 percent slopes—40 percent  
 Perlor fine sandy loam, 8 to 15 percent slopes—25 percent  
 Orovada gravelly very fine sandy loam, 2 to 4 percent slopes—20 percent  
*Contrasting inclusions*:  
 Puett fine sandy loam, 15 to 30 percent slopes—8 percent  
 Durixerollic Haplargids, fine, montmorillonitic, mesic, 4 to 8 percent slopes—4 percent  
 Durixerollic Haplargids, loamy-skeletal, mixed, mesic, 8 to 15 percent slopes—3 percent

#### **Characteristics of the Tessfive Soil**

*Classification*: Lithic Xeric Torriorthents, loamy, mixed (calcareous), mesic  
*Positions on landscape*: Convex, north- and east-facing side slopes of hills  
*Parent material*: Residuum that is derived from tuffaceous sediment and includes loess  
*Slope*: 2 to 8 percent  
*Elevation*: 5,600 to 6,000 feet  
*Average annual precipitation*: About 8 inches  
*Average annual air temperature*: About 49 degrees F  
*Frost-free season*: About 110 days  
*Dominant present vegetation*: Indian ricegrass, bluegrass, black sagebrush

#### **Typical Profile**

*Rock fragments on surface*: 35 percent pebbles  
*Depth*: 0 to 6 inches  
*Texture*: Gravelly loam  
*Structure*: Platy  
*Consistence*: Soft, very friable  
*Reaction*: Moderately alkaline  
*Salinity*: 0 to 2 millimhos per centimeter  
*Sodicity (SAR)*: 0 to 2  
*Depth*: 6 to 16 inches  
*Texture*: Gravelly loam  
*Structure*: Subangular blocky  
*Consistence*: Slightly hard, friable  
*Reaction*: Moderately alkaline  
*Salinity*: 0 to 2 millimhos per centimeter  
*Sodicity (SAR)*: 0 to 2  
*Depth*: 16 inches  
*Material*: Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock*: 10 to 20 inches  
*Depth to a seasonal high water table*: More than 60 inches  
*Frequency of flooding*: None  
*Permeability*: Moderate  
*Available water capacity*: 1.8 to 2.4 inches  
*Water-supplying capacity*: 8 inches  
*Runoff*: Medium  
*Hydrologic group*: D  
*Erosion factors (upper layer)*: K value—0.24; T value—1; wind erodibility group—5  
*Hazard of erosion*: By water—slight; by wind—slight  
*Shrink-swell potential*: Low  
*Corrosivity*: To steel—high; to concrete—low  
*Potential for frost action*: Moderate

#### **Characteristics of the Perlor Soil**

*Classification*: Typic Torriorthents, loamy, mixed (calcareous), mesic, shallow

*Positions on landscape:* South-facing side slopes of hills  
*Parent material:* Loess-capped residuum derived from tuffaceous sediment

*Slope:* 8 to 15 percent  
*Elevation:* 5,600 to 6,000 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 47 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Indian ricegrass, bluegrass, shadscale, bud sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 10 percent pebbles

*Depth:* 0 to 7 inches  
*Texture:* Fine sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 4

*Depth:* 7 to 14 inches  
*Texture:* Loam, sandy loam, gravelly sandy loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

*Depth:* 14 inches  
*Material:* Weathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 14 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 1.6 to 2.3 inches  
*Water-supplying capacity:* 6 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.32; T value—1; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Characteristics of the Orovida Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Inset fans  
*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 2 to 4 percent  
*Elevation:* 5,600 to 6,000 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

#### **Typical Profile**

*Depth:* 0 to 8 inches  
*Texture:* Gravelly very fine sandy loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 8 to 20 inches  
*Texture:* Fine sandy loam, loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

*Depth:* 20 to 65 inches  
*Texture:* Stratified fine sandy loam to silt loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 2 to 10

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 8 to 10 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.37; T value—5; wind erodibility group—4  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow  
*Positions on landscape:* Convex, eroded side slopes of hills

*Distinctive present vegetation:* Rabbitbrush, bottlebrush squirreltail, Wyoming big sagebrush, black sagebrush

**Inclusion 2**

*Classification:* Durixerollic Haplargids, fine, montmorillonitic, mesic

*Positions on landscape:* Summits of hills

*Distinctive present vegetation:* Wyoming big sagebrush

**Inclusion 3**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Toe slopes of hills

*Distinctive present vegetation:* Wyoming big sagebrush

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Tessfive Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Perlor Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

**Orovada Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses**

**Tessfive Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones

*Daily cover for landfill:* Poor—depth to rock, small stones

*Shallow excavations:* Severe—depth to rock

*Local roads and streets:* Moderate—depth to rock, frost action

*Pond reservoir areas:* Severe—depth to rock

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Perlor Soil**

*Range seeding:* Poor—too arid, droughty

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones

*Daily cover for landfill:* Poor—depth to rock

*Shallow excavations:* Severe—depth to rock

*Local roads and streets:* Moderate—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Orovada Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Tessfive and Perlor soils—VIIs, nonirrigated; Orovada soil—Ile, irrigated, and VIc, nonirrigated

*Range site:* Tessfive soil—024X030N; Perlor soil—024X002N; Orovada soil—028B010N; Inclusion 1—025X025N; Inclusions 2 and 3—028B010N

**2690—Itca Variant-Reluctan-Handy association**

*Positions on landscape:* Mountains

**Composition**

*Major components:*

Itca Variant very gravelly loam, 15 to 30 percent slopes—45 percent

Reluctan very gravelly loam, 15 to 30 percent slopes—25 percent

Handy gravelly loam, 8 to 15 percent slopes—15 percent

*Contrasting inclusions:*

Aridic Argixerolls, clayey, montmorillonitic, frigid, shallow, 4 to 15 percent slopes—8 percent

Aridic Argixerolls, fine, montmorillonitic, frigid, 4 to 15 percent slopes—4 percent

Pachic Argixerolls, loamy-skeletal, mixed, frigid, 30 to 50 percent slopes—3 percent

**Characteristics of the Itca Variant Soil**

*Classification:* Aridic Argixerolls, loamy, mixed, frigid, shallow

*Positions on landscape:* Convex side slopes of mountains

*Parent material:* Residuum derived from tuffaceous sediment

*Slope:* 15 to 30 percent

*Elevation:* 6,200 to 7,000 feet

*Average annual precipitation:* About 12 inches

*Average annual air temperature:* About 45 degrees F



*Frost-free season:* About 90 days

*Dominant present vegetation:* Bluebunch wheatgrass, needlegrass, mountain big sagebrush, singleleaf pinyon

*Site index for common trees:* Singleleaf pinyon—45; Utah juniper—45

### **Typical Profile**

*Rock fragments on surface:* 5 percent cobbles, 30 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Depth:* 3 to 12 inches

*Texture:* Gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 12 inches

*Material:* Weathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.8 to 2.2 inches

*Water-supplying capacity:* 10 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Reluctant Soil**

*Classification:* Aridic Argixerolls, fine-loamy, mixed, frigid

*Positions on landscape:* Concave, north-facing side slopes of mountains

*Parent material:* Colluvium over residuum derived from rhyolitic rock

*Slope:* 15 to 30 percent

*Elevation:* 6,200 to 7,000 feet

*Average annual precipitation:* About 12 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Bluebunch wheatgrass, needlegrass, Idaho fescue, mountain big sagebrush, snowberry

### **Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 35 percent pebbles

*Depth:* 0 to 9 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Neutral

*Depth:* 9 to 27 inches

*Texture:* Gravelly clay loam, gravelly loam

*Structure:* Subangular blocky

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 27 inches

*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 3 to 4 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Medium

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.15; T value—2; wind erodibility group—7

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Handy Soil**

*Classification:* Xerollic Haplargids, fine, montmorillonitic, frigid

*Positions on landscape:* Mountain valley fan remnants

*Parent material:* Alluvium and colluvium derived from various kinds of rock

*Slope:* 8 to 15 percent

*Elevation:* 6,200 to 7,000 feet

*Average annual precipitation:* About 12 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Indian ricegrass, needlegrass, western wheatgrass, big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Depth:* 4 to 30 inches

*Texture:* Clay, gravelly clay

*Structure:* Prismatic

*Consistence:* Very hard, very firm

*Reaction:* Moderately alkaline

*Depth:* 30 to 60 inches

*Texture:* Stratified gravelly loam to very gravelly loamy sand

*Structure:* Massive

*Consistence:* Hard, firm

*Reaction:* Moderately alkaline

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 6.0 to 7.5 inches

*Water-supplying capacity:* 10 inches

*Runoff:* Medium

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.20; T value—5; wind erodibility group—7

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Aridic Argixerolls, clayey, montmorillonitic, frigid, shallow

*Positions on landscape:* Crests of mountains

*Distinctive present vegetation:* Singleleaf pinyon, Utah juniper, mountain big sagebrush

##### **Inclusion 2**

*Classification:* Aridic Argixerolls, fine, montmorillonitic, frigid

*Positions on landscape:* Convex, north-facing crests of mountains

*Distinctive present vegetation:* Needlegrass, low sagebrush

##### **Inclusion 3**

*Classification:* Pachic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Concave, north-facing side slopes of mountains in areas where snow accumulates

*Distinctive present vegetation:* Bluebunch wheatgrass, serviceberry, mountain big sagebrush

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Itca Variant Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

##### **Reluctan Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

##### **Handy Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

##### **Itca Variant Soil**

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

##### **Reluctan Soil**

*Range seeding:* Poor—small stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

##### **Handy Soil**

*Range seeding:* Poor—rooting depth

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Severe—low strength, shrink-swell

*Pond reservoir areas:* Severe—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Itca Variant, Reluctan, and Handy soils—VIIs, nonirrigated

*Range site:* Itca Variant soil—025X062N; Reluctan

soil—024X021N; Handy soil—025X014N; Inclusion 1—025X062N; Inclusion 2—024X018N; Inclusion 3—024X021N

## **2730—Pula-Spike-Bufferan association**

*Positions on landscape:* Deeply dissected fan piedmonts

### **Composition**

*Major components:*

Pula very gravelly sandy loam, 15 to 30 percent slopes—40 percent

Spike very gravelly sandy loam, 30 to 50 percent slopes—30 percent

Bufferan gravelly loam, 4 to 8 percent slopes—15 percent

*Contrasting inclusions:*

Durixerollic Haplargids, clayey-skeletal, montmorillonitic, mesic, 15 to 50 percent slopes—8 percent

Durixerollic Camborthids, loamy-skeletal, mixed, mesic, 4 to 15 percent slopes—4 percent

Durixerollic Haplargids, fine-loamy, mixed, mesic, 8 to 15 percent slopes—3 percent

### **Characteristics of the Pula Soil**

*Classification:* Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic

*Positions on landscape:* North-facing side slopes of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 15 to 30 percent

*Elevation:* 5,200 to 6,000 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, bottlebrush squirreltail, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 45 percent pebbles

*Depth:* 0 to 2 inches

*Texture:* Very gravelly sandy loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 2 to 24 inches

*Texture:* Very gravelly clay loam, extremely gravelly clay

*Structure:* Subangular blocky

*Consistence:* Very hard, firm

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 24 to 60 inches

*Texture:* Extremely gravelly sandy loam

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 3 to 5 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.10; T value—5; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Spike Soil**

*Classification:* Typic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* South-facing side slopes of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 30 to 50 percent

*Elevation:* 5,200 to 6,000 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, galleta, shadscale, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 5 percent cobbles, 70 percent pebbles

*Depth:* 0 to 2 inches

*Texture:* Very gravelly sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 2 to 6 inches

*Texture:* Very gravelly clay, very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Very hard, firm

*Reaction:* Moderately alkaline

*Salinity:* 2 to 8 millimhos per centimeter  
*Sodicity (SAR):* 13 to 25  
*Depth:* 6 to 60 inches  
*Texture:* Extremely gravelly clay loam, very gravelly loam

*Structure:* Massive  
*Consistence:* Hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 8 millimhos per centimeter  
*Sodicity (SAR):* 13 to 25

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 2.7 to 5.0 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Rapid  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.20; T value—5; wind erodibility group—5  
*Hazard of erosion:* By water—severe; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—moderate  
*Potential for frost action:* Low

**Characteristics of the Buffaran Soil**

*Classification:* Xerollic Durargids, clayey, montmorillonitic, mesic, shallow  
*Positions on landscape:* Summits of fan piedmont remnants  
*Parent material:* Mixed alluvium  
*Slope:* 4 to 8 percent  
*Elevation:* 5,200 to 6,000 feet  
*Average annual precipitation:* About 10 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Thurber needlegrass, bottlebrush squirreltail, Indian ricegrass, Wyoming big sagebrush

**Typical Profile**

*Rock fragments on surface:* 15 percent pebbles  
*Depth:* 0 to 5 inches  
*Texture:* Gravelly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 5 to 16 inches  
*Texture:* Clay, gravelly clay, gravelly clay loam  
*Structure:* Prismatic

*Consistence:* Hard, firm  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 16 to 27 inches  
*Material:* Indurated hardpan  
*Structure:* Massive  
*Consistence:* Extremely hard, extremely firm  
*Depth:* 27 to 60 inches  
*Material:* Cemented hardpan  
*Structure:* Platy  
*Consistence:* Very hard, very firm

**Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 1.9 to 2.4 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.32; T value—1; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* High  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

**Contrasting Inclusions**

**Inclusion 1**

*Classification:* Durixerollic Haplargids, clayey-skeletal, montmorillonitic, mesic  
*Positions on landscape:* The lowest parts of north-facing side slopes of fan piedmont remnants  
*Distinctive present vegetation:* Black sagebrush, bottlebrush squirreltail

**Inclusion 2**

*Classification:* Durixerollic Camborthids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Inset fans  
*Distinctive present vegetation:* Bluegrass, basin wildrye, basin big sagebrush

**Inclusion 3**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic  
*Positions on landscape:* Toe slopes of fan piedmont remnants  
*Distinctive present vegetation:* Wyoming big sagebrush

**Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Pula Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Spike Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Buffaran Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Pula Soil**

*Range seeding:* Poor—small stones

*Roadfill:* Fair—large stones, slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—seepage, small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

#### **Spike Soil**

*Range seeding:* Poor—too arid, small stones, erodes easily

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Buffaran Soil**

*Range seeding:* Poor—droughty, rooting depth

*Roadfill:* Poor—cemented pan, shrink-swell, low strength

*Topsoil:* Poor—cemented pan, too clayey, small stones

*Daily cover for landfill:* Poor—cemented pan, hard to pack

*Shallow excavations:* Severe—cemented pan

*Local roads and streets:* Severe—cemented pan, shrink-swell, low strength

*Pond reservoir areas:* Severe—cemented pan

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Pula, Spike, Buffaran soils—VIIs, nonirrigated

*Range site:* Pula and Buffaran soils—028B010N; Spike soil—024X045N; Inclusion 1—024X030N; Inclusion 2—028B003N; Inclusion 3—028B016N

### **2731—Pula-Spike association**

*Positions on landscape:* Deeply dissected fan piedmonts

### **Composition**

*Major components:*

Pula very cobbly loam, 30 to 50 percent slopes—50 percent

Spike very gravelly sandy loam, 30 to 50 percent slopes—35 percent

*Contrasting inclusions:*

Duric Natrargids, fine, montmorillonitic, mesic, 2 to 8 percent slopes—6 percent

Xeric Torriorthents, loamy, mixed (calcareous), mesic, 15 to 50 percent slopes—4 percent

Durixerollic Haplargids, loamy-skeletal, mixed, mesic, 4 to 15 percent slopes—3 percent

Durixerollic Haplargids, fine-loamy, mixed, mesic, 4 to 15 percent slopes—2 percent

### **Characteristics of the Pula Soil**

*Classification:* Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic

*Positions on landscape:* North-facing side slopes of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 30 to 50 percent

*Elevation:* 5,300 to 5,700 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, bottlebrush squirreltail, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 45 percent pebbles

*Depth:* 0 to 2 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 2 to 24 inches

*Texture:* Very gravelly clay loam, extremely gravelly clay

*Structure:* Subangular blocky

*Consistence:* Very hard, firm

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 24 to 60 inches

*Texture:* Extremely gravelly sandy loam

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 3 to 5 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.10; T value—5; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

#### **Characteristics of the Spike Soil**

*Classification:* Typic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* South-facing side slopes of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 30 to 50 percent

*Elevation:* 5,200 to 5,700 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, galleta, shadscale, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 5 percent cobbles, 70 percent pebbles

*Depth:* 0 to 2 inches

*Texture:* Very gravelly sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 2 to 6 inches

*Texture:* Very gravelly clay, very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Very hard, firm

*Reaction:* Moderately alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

*Depth:* 6 to 60 inches

*Texture:* Extremely gravelly clay loam, very gravelly loam

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 2.7 to 5.0 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.20; T value—5; wind erodibility group—5

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—moderate

*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Duric Natrargids, fine, montmorillonitic, mesic

*Positions on landscape:* The lower summits of fan piedmont remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush

##### **Inclusion 2**

*Classification:* Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, shallow

*Positions on landscape:* Eroded side slopes of hills along edges of fan piedmont remnants

*Distinctive present vegetation:* Shadscale, Wyoming big sagebrush, galleta

##### **Inclusion 3**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Needlegrass, Indian ricegrass, Wyoming big sagebrush

**Inclusion 4**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* The upper summits of fan piedmont remnants

*Distinctive present vegetation:* Needlegrass, Wyoming big sagebrush, spiny hopsage

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Pula Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Spike Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

**Suitability and Limitations for Selected Uses****Pula Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Poor—large stones, slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—seepage, small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

**Spike Soil**

*Range seeding:* Poor—too arid, small stones, erodes easily

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Pula and Spike soils—VIIIs, nonirrigated

*Range site:* Pula soil—028B010N; Spike soil—024X045N; Inclusion 1—024X002N; Inclusion 2—024X045N; Inclusion 3—028B010N; Inclusion 4—024X020N

**2740—Spike-Desatoya Variant-Grassval association**

*Positions on landscape:* Deeply dissected fan piedmonts

**Composition****Major components:**

Spike very gravelly sandy loam, 30 to 50 percent slopes—35 percent

Desatoya Variant very gravelly sandy loam, 15 to 50 percent slopes—35 percent

Grassval gravelly loam, 4 to 8 percent slopes—15 percent

**Contrasting inclusions:**

Xerollic Durargids, fine, montmorillonitic, mesic, shallow, 4 to 8 percent slopes—8 percent

Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic, 4 to 15 percent slopes—7 percent

**Characteristics of the Spike Soil**

*Classification:* Typic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* South-facing side slopes of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 30 to 50 percent

*Elevation:* 5,400 to 5,900 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, galleta, shadscale, Wyoming big sagebrush

**Typical Profile**

*Rock fragments on surface:* 5 percent cobbles, 70 percent pebbles

*Depth:* 0 to 2 inches

*Texture:* Very gravelly sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 2 to 6 inches

*Texture:* Very gravelly clay, very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Very hard, firm

*Reaction:* Moderately alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

*Depth:* 6 to 60 inches

*Texture:* Extremely gravelly clay loam, very gravelly loam

*Structure:* Massive  
*Consistence:* Hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 8 millimhos per centimeter  
*Sodicity (SAR):* 13 to 25

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 2.7 to 5.0 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Rapid  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.20; T value—5; wind erodibility group—5  
*Hazard of erosion:* By water—severe; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—moderate  
*Potential for frost action:* Low

#### **Characteristics of the Desatoya Variant Soil**

*Classification:* Xerollic Haplargids, fine-loamy, mixed, mesic  
*Positions on landscape:* North-facing side slopes of fan piedmont remnants  
*Parent material:* Mixed alluvium  
*Slope:* 15 to 50 percent  
*Elevation:* 5,400 to 5,900 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bottlebrush squirreltail, bluegrass, Indian ricegrass, black sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 5 percent cobbles, 45 percent pebbles  
*Depth:* 0 to 3 inches  
*Texture:* Very gravelly sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 3 to 13 inches  
*Texture:* Gravelly clay loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 13 to 26 inches  
*Texture:* Very gravelly sandy loam  
*Structure:* Massive  
*Consistence:* Hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5  
*Depth:* 26 to 60 inches  
*Texture:* Very gravelly sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Strongly alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate over rapid  
*Available water capacity:* 2.8 to 4.4 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Rapid  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.10; T value—5; wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Characteristics of the Grassval Soil**

*Classification:* Xerollic Durargids, loamy, mixed, mesic, shallow  
*Positions on landscape:* Summits of fan piedmont remnants  
*Parent material:* Mixed alluvium  
*Slope:* 4 to 8 percent  
*Elevation:* 5,400 to 5,900 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 46 degrees F  
*Frost-free season:* About 100 days  
*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, black sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 10 percent pebbles  
*Depth:* 0 to 4 inches  
*Texture:* Gravelly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter



*Sodicity (SAR):* 0 to 2

*Depth:* 4 to 13 inches

*Texture:* Gravelly clay loam, gravelly loam

*Structure:* Subangular blocky

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 13 inches

*Material:* Indurated hardpan

### **Soil and Water Features**

*Depth to the hardpan:* 8 to 14 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.6 to 1.9 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Xerollic Durargids, fine, montmorillonitic, mesic, shallow

*Positions on landscape:* Slightly concave summits of fan piedmont remnants

*Distinctive present vegetation:* Wyoming big sagebrush, bluegrass

#### **Inclusion 2**

*Classification:* Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Bluegrass, spiny hopsage, Wyoming big sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Spike Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Desatoya Variant Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Grassval Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Spike Soil**

*Range seeding:* Poor—too arid, small stones, erodes easily

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Desatoya Variant Soil**

*Range seeding:* Poor—small stones

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

#### **Grassval Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—cemented pan, small stones

*Daily cover for landfill:* Poor—cemented pan, small stones

*Shallow excavations:* Severe—cemented pan

*Local roads and streets:* Severe—cemented pan

*Pond reservoir areas:* Severe—cemented pan

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Spike, Desatoya Variant, and Grassval soils—VIIs, nonirrigated

*Range site:* Spike soil—024X045N; Desatoya Variant and Grassval soils—024X030N; Inclusion 1—028B010N; Inclusion 2—024X020N

### **2771—Kram-Hopeka-Rock outcrop association**

*Positions on landscape:* Mountains

### **Composition**

#### *Major components:*

Kram very gravelly very fine sandy loam, 30 to 50 percent slopes—35 percent

Hopeka very gravelly loam, 30 to 50 percent slopes—35 percent

Rock outcrop—15 percent

#### *Contrasting inclusions:*

Aridic Calcixerolls, loamy-skeletal, mixed, frigid, 15 to 30 percent slopes—8 percent

Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 15 to 30 percent slopes—4 percent

Durorthidic Xeric Torriorthents, loamy-skeletal, carbonatic, mesic, 15 to 30 percent slopes—3 percent

### **Characteristics of the Kram Soil**

*Classification:* Lithic Xeric Torriorthents, loamy-skeletal, carbonatic, mesic

*Positions on landscape:* The lower side slopes of mountains

*Parent material:* Residuum derived from limestone

*Slope:* 30 to 50 percent

*Elevation:* 5,400 to 7,200 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 95 days

*Dominant present vegetation:* Bluegrass, black sagebrush, singleleaf pinyon, Utah juniper

*Site index for common trees:* Singleleaf pinyon—45; Utah juniper—45

#### **Typical Profile**

*Rock fragments on surface:* 65 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Very gravelly very fine sandy loam

*Structure:* Granular

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Depth:* 3 to 10 inches

*Texture:* Very gravelly loam, very gravelly very fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Depth:* 10 inches

*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 8 to 14 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 1.0 to 1.3 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—1; wind erodibility group—5

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Hopeka Soil**

*Classification:* Lithic Xeric Torriorthents, loamy-skeletal, carbonatic, frigid

*Positions on landscape:* The upper side slopes of mountains

*Parent material:* Residuum derived from limestone and dolostone

*Slope:* 30 to 50 percent

*Elevation:* 6,500 to 7,800 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 90 days

*Dominant present vegetation:* Bluegrass, black sagebrush, singleleaf pinyon, Utah juniper

*Site index for common trees:* Singleleaf pinyon—33; Utah juniper—33

#### **Typical Profile**

*Rock fragments on surface:* 25 percent cobbles, 20 percent pebbles

*Depth:* 0 to 8 inches

*Texture:* Very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Depth:* 8 inches

*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 4 to 10 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 0.4 to 0.7 inch

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.20; T value—1; wind erodibility group—7

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

### **Characteristics of the Rock Outcrop**

*Positions on landscape:* Scattered peaks, exposed bedding planes

*Dominant present vegetation:* None

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Aridic Calcixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* North-facing side slopes of mountains

*Distinctive present vegetation:* Bluebunch wheatgrass, mountain big sagebrush, currant

#### **Inclusion 2**

*Classification:* Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic

*Positions on landscape:* Convex, lower side slopes of mountains

*Distinctive present vegetation:* Bluegrass, black sagebrush

#### **Inclusion 3**

*Classification:* Durorthidic Xeric Torriorthents, loamy-skeletal, carbonatic, mesic

*Positions on landscape:* Intermountain drainageways

*Distinctive present vegetation:* Basin wildrye, bluegrass, basin big sagebrush

### **Major Uses**

*Current uses:* Livestock grazing, wildlife habitat

*Potential foreseeable use:* Cordwood production

### **Suitability for Wildlife Habitat Elements**

#### **Kram Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Coniferous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

#### **Hopeka Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Coniferous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

### **Suitability and Limitations for Selected Uses**

#### **Kram Soil**

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Hopeka Soil**

*Range seeding:* Poor—droughty, depth to rock, small stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Kram and Hopeka soils—VIIIs, nonirrigated; Rock outcrop—VIIIIs, nonirrigated

*Range site:* Kram and Hopeka soils—025X063N; Rock outcrop—none; Inclusion 1—024X021N; Inclusion 2—024X030N; Inclusion 3—025X003N

## **2780—Desatoya-Tenabo-Pineval association**

*Positions on landscape:* Fan piedmonts

### **Composition**

*Major components:*

Desatoya gravelly fine sandy loam, 2 to 4 percent slopes—45 percent

Tenabo very gravelly fine sandy loam, 4 to 8 percent slopes—25 percent

Pineval gravelly loam, 4 to 8 percent slopes—15 percent

*Contrasting inclusions:*

Durixerollic Haplargids, loamy-skeletal, mixed, mesic, 15 to 30 percent slopes—7 percent

Durixerollic Haplargids, loamy-skeletal, mixed, mesic, 8 to 15 percent slopes—6 percent

Xerollic Durargids, clayey, montmorillonitic, mesic, shallow, 2 to 4 percent slopes—2 percent

### **Characteristics of the Desatoya Soil**

*Classification:* Durixerollic Haplargids, clayey over loamy-skeletal, montmorillonitic, mesic

*Positions on landscape:* Slightly dissected fan aprons

*Parent material:* Mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 6,000 to 6,500 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, needlegrass, Indian ricegrass, black sagebrush

**Typical Profile**

*Rock fragments on surface:* 25 percent pebbles

*Depth:* 0 to 6 inches

*Texture:* Gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 13 inches

*Texture:* Gravelly clay, gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 13 to 60 inches

*Texture:* Stratified extremely gravelly sandy loam, very gravelly loamy sand

*Structure:* Massive

*Consistence:* Hard, firm

*Reaction:* Strongly alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 4.0 to 5.3 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.20; T value—5; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

**Characteristics of the Tenabo Soil**

*Classification:* Typic Nadurargids, loamy, mixed, mesic, shallow

*Positions on landscape:* Nonburied summits of fan piedmont remnants

*Parent material:* Thin loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 4 to 8 percent

*Elevation:* 6,000 to 6,500 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass

**Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Very gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 5 to 17 inches

*Texture:* Clay loam, gravelly clay loam, silty clay loam

*Structure:* Prismatic

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

*Depth:* 17 to 31 inches

*Material:* Indurated hardpan

*Structure:* Platy

*Consistence:* Extremely hard, extremely firm

*Depth:* 31 to 60 inches

*Texture:* Stratified very gravelly sandy loam to extremely gravelly coarse sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

**Soil and Water Features**

*Depth to the hardpan:* 9 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 2.2 to 2.4 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—1; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—moderate

*Potential for frost action:* Low

**Characteristics of the Pineval Soil**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Side slopes of fan piedmont remnants, fan drainageways

*Parent material:* Mixed alluvium  
*Slope:* 4 to 8 percent  
*Elevation:* 6,000 to 6,500 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 10 percent pebbles  
*Depth:* 0 to 5 inches  
*Texture:* Gravelly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 5 to 11 inches  
*Texture:* Very gravelly loam, very gravelly clay loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 11 to 60 inches  
*Texture:* Extremely gravelly sandy loam, extremely gravelly loamy sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 3.2 to 4.4 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Medium  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.28; T value—5; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* East-facing shoulder slopes and scarps of fan piedmonts

*Distinctive present vegetation:* Wyoming big sagebrush

##### **Inclusion 2**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Side slopes of fan piedmont remnants

*Distinctive present vegetation:* Bluegrass, black sagebrush

##### **Inclusion 3**

*Classification:* Xerollic Durargids, clayey, montmorillonitic, mesic, shallow

*Positions on landscape:* The highest summits of nonburied fan piedmont remnants

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Desatoya Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

##### **Tenabo Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

##### **Pineval Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

##### **Desatoya Soil**

*Range seeding:* Poor—rooting depth

*Roadfill:* Fair—large stones

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Moderate—large stones

*Local roads and streets:* Moderate—frost action, large stones

*Pond reservoir areas:* Moderate—slope, seepage

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

##### **Tenabo Soil**

*Range seeding:* Poor—too arid, droughty, excess sodium

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—cemented pan, small stones, too sandy

*Daily cover for landfill:* Poor—cemented pan, seepage, too sandy

*Shallow excavations:* Severe—cemented pan, cutbanks cave

*Local roads and streets:* Severe—cemented pan  
*Pond reservoir areas:* Severe—seepage, cemented pan  
*Embankments, dikes, and levees:* Severe—seepage, excess sodium, excess salt

*Sand:* Probable source  
*Gravel:* Probable source

#### **Pineval Soil**

*Range seeding:* Fair—too arid  
*Roadfill:* Good  
*Topsoil:* Poor—small stones, area reclaim  
*Daily cover for landfill:* Poor—seepage, too sandy, small stones  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Moderate—frost action  
*Pond reservoir areas:* Moderate—seepage, slope  
*Embankments, dikes, and levees:* Severe—seepage  
*Sand:* Probable source  
*Gravel:* Probable source

#### **Interpretive Groups**

*Land capability classification:* Desatoya soil—VIIs, nonirrigated; Tenabo soil—IVe, irrigated, and VIIs, nonirrigated; Pineval soil—IVe, irrigated, and VIIs, nonirrigated

*Range site:* Desatoya soil—027X032N; Tenabo soil—028B017N; Pineval soil—028B010N; Inclusion 1—028B010N; Inclusion 2—028B011N; Inclusion 3—028B010N

### **2781—Desatoya-Orovada association**

*Positions on landscape:* Fan piedmonts

#### **Composition**

*Major components:*

Desatoya gravelly fine sandy loam, 4 to 8 percent slopes—60 percent

Orovada gravelly fine sandy loam, 4 to 8 percent slopes—25 percent

*Contrasting inclusions:*

Durixerollic Haplargids, fine-loamy, mixed, mesic, 2 to 8 percent slopes—7 percent

Duric Natrargids, fine-loamy, mixed, mesic, 2 to 8 percent slopes—5 percent

Durixerollic Haplargids, fine, montmorillonitic, mesic, 4 to 15 percent slopes—3 percent

#### **Characteristics of the Desatoya Soil**

*Classification:* Durixerollic Haplargids, clayey over loamy-skeletal, montmorillonitic, mesic

*Positions on landscape:* Summits of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 4 to 8 percent

*Elevation:* 6,000 to 6,300 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, needlegrass, Indian ricegrass, black sagebrush

#### **Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 13 inches

*Texture:* Gravelly clay, gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 13 to 60 inches

*Texture:* Stratified extremely gravelly sandy loam to very gravelly loamy sand

*Structure:* Massive

*Consistence:* Hard, firm

*Reaction:* Strongly alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 4.0 to 5.3 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.20; T value—5; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Orovada Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Inset fans

*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 4 to 8 percent

*Elevation:* 6,000 to 6,300 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

### **Typical Profile**

*Depth:* 0 to 8 inches  
*Texture:* Gravelly fine sandy loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 8 to 20 inches  
*Texture:* Fine sandy loam, loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 20 to 65 inches  
*Texture:* Stratified fine sandy loam to silt loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 2 to 10

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 8.2 to 9.0 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Medium  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.28; T value—5; wind erodibility group—4  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic  
*Positions on landscape:* Slightly concave side slopes of fan piedmont remnants  
*Distinctive present vegetation:* Bluegrass, Wyoming big sagebrush

#### **Inclusion 2**

*Classification:* Duric Natrargids, fine-loamy, mixed, mesic  
*Positions on landscape:* The lower summits of fan piedmont remnants  
*Distinctive present vegetation:* Bottlebrush squirreltail, shadscale, bud sagebrush

#### **Inclusion 3**

*Classification:* Durixerollic Haplargids, fine, montmorillonitic, mesic  
*Positions on landscape:* The upper summits of fan piedmont remnants  
*Distinctive present vegetation:* Bluegrass, Indian ricegrass, black sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Desatoya Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### **Orovada Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Desatoya Soil**

*Range seeding:* Poor—rooting depth  
*Roadfill:* Fair—large stones  
*Topsoil:* Poor—small stones, area reclaim  
*Daily cover for landfill:* Poor—small stones  
*Shallow excavations:* Moderate—large stones  
*Local roads and streets:* Moderate—frost action, large stones  
*Pond reservoir areas:* Moderate—slope, seepage  
*Embankments, dikes, and levees:* Severe—seepage  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Orovada Soil**

*Range seeding:* Fair—too arid  
*Roadfill:* Good  
*Topsoil:* Poor—small stones  
*Daily cover for landfill:* Good  
*Shallow excavations:* Slight  
*Local roads and streets:* Moderate—frost action  
*Pond reservoir areas:* Moderate—seepage, slope  
*Embankments, dikes, and levees:* Severe—piping  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Desatoya soil—VIIIs,

nonirrigated; Orovada soil—IIIc, irrigated, and VIc, nonirrigated

*Range site:* Desatoya soil—027X032N; Orovada soil—028B010N; Inclusion 1—028B010N; Inclusion 2—028B017N; Inclusion 3—027X032N

## **2782—Desatoya-Pineval-Grassval association**

*Positions on landscape:* Piedmont slopes

### **Composition**

*Major components:*

Desatoya very gravelly loam, 8 to 15 percent slopes—35 percent

Pineval gravelly loam, 2 to 8 percent slopes—35 percent

Grassval gravelly loam, 2 to 8 percent slopes—15 percent

*Contrasting inclusions:*

Durixerollic Haplargids, loamy-skeletal, mixed, mesic, 8 to 15 percent slopes—7 percent

Durixerollic Camborthids, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—4 percent

Durixerollic Haplargids, fine-loamy, mixed, mesic, 4 to 8 percent slopes—4 percent

### **Characteristics of the Desatoya Soil**

*Classification:* Durixerollic Haplargids, clayey over loamy-skeletal, montmorillonitic, mesic

*Positions on landscape:* Convex side slopes of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 8 to 15 percent

*Elevation:* 6,300 to 6,600 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, needlegrass, Indian ricegrass, black sagebrush

### **Typical Profile**

*Rock fragments on surface:* 5 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 3 to 14 inches

*Texture:* Gravelly clay, gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 14 to 60 inches

*Texture:* Stratified extremely gravelly sandy loam to very gravelly loamy sand

*Structure:* Massive

*Consistence:* Hard, firm

*Reaction:* Strongly alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 4.0 to 5.4 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Medium

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.10; T value—5; wind erodibility group—7

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Pineval Soil**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Fan skirts

*Parent material:* Mixed alluvium

*Slope:* 2 to 8 percent

*Elevation:* 6,300 to 6,600 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 10 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Depth:* 5 to 11 inches

*Texture:* Very gravelly loam, very gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline



*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 11 to 60 inches

*Texture:* Extremely gravelly sandy loam, extremely gravelly loamy sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 3.2 to 4.4 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.28; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Grassval Soil**

*Classification:* Xerollic Durargids, loamy, mixed, mesic, shallow

*Positions on landscape:* The highest summits of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 2 to 8 percent

*Elevation:* 6,300 to 6,600 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 46 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, black sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 10 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 4 to 13 inches

*Texture:* Gravelly clay loam, gravelly loam

*Structure:* Subangular blocky

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 13 inches

*Material:* Indurated hardpan

#### **Soil and Water Features**

*Depth to the hardpan:* 8 to 14 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.6 to 1.9 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* The higher side slopes of fan piedmont remnants

*Distinctive present vegetation:* Black sagebrush, bluegrass, rabbitbrush

##### **Inclusion 2**

*Classification:* Durixerollic Camborthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Wyoming big sagebrush

##### **Inclusion 3**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* The lower summits of fan piedmont remnants

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Desatoya Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

##### **Pineval Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Grassval Soil***Wild herbaceous plants (nonirrigated):* Fair*Shrubs (nonirrigated):* Fair**Suitability and Limitations for Selected Uses****Desatoya Soil***Range seeding:* Poor—rooting depth, small stones*Roadfill:* Fair—large stones*Topsoil:* Poor—small stones, area reclaim*Daily cover for landfill:* Poor—small stones*Shallow excavations:* Moderate—large stones, slope*Local roads and streets:* Moderate—slope, frost action, large stones*Pond reservoir areas:* Severe—slope*Embankments, dikes, and levees:* Severe—seepage*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines**Pineval Soil***Range seeding:* Fair—too arid*Roadfill:* Good*Topsoil:* Poor—small stones, area reclaim*Daily cover for landfill:* Poor—seepage, too sandy, small stones*Shallow excavations:* Severe—cutbanks cave*Local roads and streets:* Moderate—frost action*Pond reservoir areas:* Moderate—seepage, slope*Embankments, dikes, and levees:* Severe—seepage*Sand:* Probable source*Gravel:* Probable source**Grassval Soil***Range seeding:* Poor—droughty*Roadfill:* Poor—cemented pan*Topsoil:* Poor—cemented pan, small stones*Daily cover for landfill:* Poor—cemented pan, small stones*Shallow excavations:* Severe—cemented pan*Local roads and streets:* Severe—cemented pan*Pond reservoir areas:* Severe—cemented pan*Embankments, dikes, and levees:* Severe—thin layer*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines**Interpretive Groups***Land capability classification:* Desatoya and Grassval soils—VIIs, nonirrigated; Pineval soil—IVe, irrigated, and VIIs, nonirrigated*Range site:* Desatoya soil—024X030N; Pineval soil—028B010N; Grassval soil—028B011N; Inclusion 1—024X030N; Inclusions 2 and 3—028B010N**2783—Desatoya-Spike association***Positions on landscape:* Strongly dissected fan piedmonts**Composition***Major components:*

Desatoya very gravelly sandy loam, 30 to 50 percent slopes—35 percent

Spike very gravelly sandy loam, 30 to 50 percent slopes—35 percent

Desatoya gravelly sandy loam, 8 to 15 percent slopes—15 percent

*Contrasting inclusions:*

Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic, 15 to 50 percent slopes—8 percent

Durixerollic Camborthids, coarse-loamy, mixed, mesic, 4 to 8 percent slopes—4 percent

Durixerollic Haplargids, loamy-skeletal, mixed, mesic, 4 to 15 percent slopes—3 percent

**Characteristics of the Desatoya Soil, Steep***Classification:* Durixerollic Haplargids, clayey over loamy-skeletal, montmorillonitic, mesic*Positions on landscape:* Convex, north- and east-facing side slopes of fan piedmont remnants*Parent material:* Mixed alluvium*Slope:* 30 to 50 percent*Elevation:* 5,200 to 6,000 feet*Average annual precipitation:* About 10 inches*Average annual air temperature:* About 48 degrees F*Frost-free season:* About 110 days*Dominant present vegetation:* Bluegrass, needlegrass, Indian ricegrass, black sagebrush**Typical Profile***Rock fragments on surface:* 45 percent pebbles*Depth:* 0 to 3 inches*Texture:* Very gravelly sandy loam*Structure:* Platy*Consistence:* Slightly hard, very friable*Reaction:* Mildly alkaline*Salinity:* 0 to 2 millimhos per centimeter*Sodicity (SAR):* 0 to 2*Depth:* 3 to 14 inches*Texture:* Gravelly clay, gravelly clay loam*Structure:* Prismatic*Consistence:* Hard, friable*Reaction:* Mildly alkaline*Salinity:* 0 to 2 millimhos per centimeter*Sodicity (SAR):* 0 to 2*Depth:* 14 to 60 inches*Texture:* Stratified extremely gravelly sandy loam to very gravelly loamy sand*Structure:* Massive*Consistence:* Hard, firm*Reaction:* Strongly alkaline*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 4.0 to 5.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.10; T value—5; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Spike Soil**

*Classification:* Typic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* South- and west-facing side slopes of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 30 to 50 percent

*Elevation:* 5,200 to 6,000 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, galleta, shadscale, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 5 percent cobbles, 70 percent pebbles

*Depth:* 0 to 2 inches

*Texture:* Very gravelly sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 2 to 6 inches

*Texture:* Very gravelly clay, very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Very hard, firm

*Reaction:* Moderately alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

*Depth:* 6 to 60 inches

*Texture:* Extremely gravelly clay loam, very gravelly loam

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 2.7 to 5.0 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.20; T value—5; wind erodibility group—5

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—moderate

*Potential for frost action:* Low

### **Characteristics of the Desatoya Soil, Strongly Sloping**

*Classification:* Durixerollic Haplargids, clayey over loamy-skeletal, montmorillonitic, mesic

*Positions on landscape:* Convex crests and shoulder slopes of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 8 to 15 percent

*Elevation:* 5,300 to 6,000 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, needlegrass, Indian ricegrass, black sagebrush

### **Typical Profile**

*Rock fragments on surface:* 25 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Gravelly sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 3 to 14 inches

*Texture:* Gravelly clay, gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 14 to 60 inches

*Texture:* Stratified extremely gravelly sandy loam to very gravelly loamy sand

*Structure:* Massive  
*Consistence:* Hard, firm  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 8 millimhos per centimeter  
*Sodicity (SAR):* 2 to 10

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 4.0 to 5.4 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Medium  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.20; T value—5; wind erodibility group—4  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* High  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic  
*Positions on landscape:* Slightly concave side slopes of fan piedmont remnants  
*Distinctive present vegetation:* Small rabbitbrush, bluegrass, Wyoming big sagebrush

##### **Inclusion 2**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Inset fans  
*Distinctive present vegetation:* Basin big sagebrush

##### **Inclusion 3**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* The lower, concave side slopes of fan piedmont remnants  
*Distinctive present vegetation:* Wyoming big sagebrush, small rabbitbrush, bottlebrush squirreltail

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Desatoya Soil, Steep**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

##### **Spike Soil**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor

##### **Desatoya Soil, Strongly Sloping**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

##### **Desatoya Soil, Steep**

*Range seeding:* Poor—rooting depth, small stones  
*Roadfill:* Poor—slope  
*Topsoil:* Poor—small stones, area reclaim, slope  
*Daily cover for landfill:* Poor—small stones, slope  
*Shallow excavations:* Severe—slope  
*Local roads and streets:* Severe—slope  
*Pond reservoir areas:* Severe—slope  
*Embankments, dikes, and levees:* Severe—seepage  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

##### **Spike Soil**

*Range seeding:* Poor—small stones, erodes easily, excess salt  
*Roadfill:* Poor—slope  
*Topsoil:* Poor—small stones, area reclaim, slope  
*Daily cover for landfill:* Poor—small stones, slope  
*Shallow excavations:* Severe—slope  
*Local roads and streets:* Severe—slope  
*Pond reservoir areas:* Severe—slope  
*Embankments, dikes, and levees:* Moderate—large stones  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

##### **Desatoya Soil, Strongly Sloping**

*Range seeding:* Poor—rooting depth  
*Roadfill:* Fair—large stones  
*Topsoil:* Poor—small stones, area reclaim  
*Daily cover for landfill:* Poor—small stones  
*Shallow excavations:* Moderate—large stones, slope  
*Local roads and streets:* Moderate—slope, frost action, large stones  
*Pond reservoir areas:* Severe—slope  
*Embankments, dikes, and levees:* Severe—seepage  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Desatoya and Spike soils—VIIs, nonirrigated  
*Range site:* Desatoya soils—024X030N; Spike soil—024X045N; Inclusion 1—028B010N; Inclusion 2—028B003N; Inclusion 3—028B010N

#### **2791—Old Camp-Colbar-Rock outcrop association**

*Positions on landscape:* Mountains

### **Composition**

#### *Major components:*

Old Camp very cobbly loam, 4 to 15 percent slopes—40 percent

Colbar very cobbly loam, 15 to 30 percent slopes—30 percent

Rock outcrop—15 percent

#### *Contrasting inclusions:*

Xerollic Durargids, clayey, montmorillonitic, mesic, shallow, 15 to 30 percent slopes—7 percent

McVegas very gravelly loam, 4 to 15 percent slopes—5 percent

Haploxerollic Durargids, fine, montmorillonitic, mesic, 4 to 15 percent slopes—3 percent

### **Characteristics of the Old Camp Soil**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Convex crests and shoulder slopes of mountains

*Parent material:* Residuum derived from basalt and andesite

*Slope:* 4 to 15 percent

*Elevation:* 5,400 to 6,000 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, Thurber needlegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 20 percent pebbles

*Depth:* 0 to 2 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Depth:* 2 to 11 inches

*Texture:* Very gravelly loam, very cobbly clay loam

*Structure:* Angular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Depth:* 11 inches

*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 0.9 to 1.2 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Colbar Soil**

*Classification:* Xerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* Concave, north-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from rhyolite and andesite

*Slope:* 15 to 30 percent

*Elevation:* 5,400 to 6,000 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Needlegrass, bluegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 10 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Depth:* 3 to 22 inches

*Texture:* Cobbly loam, gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Depth:* 22 to 26 inches

*Texture:* Gravelly loam, cobbly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Depth:* 26 inches

*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 3.3 to 3.8 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.10; T value—2;  
wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Rock Outcrop**

*Positions on landscape:* Escarpments and severely eroded side slopes of mountains

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Xerollic Durargids, clayey, montmorillonitic, mesic, shallow

*Positions on landscape:* Convex, south-facing side slopes of mountains

*Distinctive present vegetation:* Bluebunch wheatgrass, big sagebrush

#### **Inclusion 2**

*Classification:* Haplic Nadurargids, clayey-skeletal, montmorillonitic, mesic, shallow

*Positions on landscape:* Convex, broad crests and saddles of mountains

*Distinctive present vegetation:* Shadscale, small rabbitbrush, bud sagebrush

#### **Inclusion 3**

*Classification:* Haploxerollic Durargids, fine, montmorillonitic, mesic

*Positions on landscape:* Convex crests and shoulder slopes of mountains

*Distinctive present vegetation:* Spiny hopsage, Wyoming big sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Old Camp Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Colbar Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Old Camp Soil**

*Range seeding:* Poor—large stones, droughty

*Roadfill:* Poor—depth to rock, large stones

*Topsoil:* Poor—depth to rock, small stones

*Daily cover for landfill:* Poor—depth to rock, small stones

*Shallow excavations:* Severe—depth to rock, large stones

*Local roads and streets:* Severe—depth to rock, large stones

*Pond reservoir areas:* Severe—depth to rock, large stones

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Colbar Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—large stones, slope

*Daily cover for landfill:* Poor—depth to rock, large stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—seepage, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Old Camp and Colbar soils—VIIIs, nonirrigated; Rock outcrop—VIIIIs, nonirrigated

*Range site:* Old Camp and Colbar soils—024X005N; Rock outcrop—none; Inclusion 1—024X028N; Inclusion 2—024X002N; Inclusion 3—024X020N

## **2792—Old Camp-Allor-Puett association**

*Positions on landscape:* Foothills, fan piedmonts

### **Composition**

*Major components:*

Old Camp gravelly loam, 4 to 15 percent slopes—40 percent

Allor gravelly loam, 2 to 8 percent slopes—30 percent

Puett very gravelly loam, 15 to 30 percent slopes—15 percent

*Contrasting inclusions:*

Duco very cobbly loam, 15 to 30 percent slopes—6 percent

Durixerollic Haplargids, fine-loamy, mixed, mesic, 0 to 2 percent slopes—5 percent

Jung very cobbly fine sandy loam, 4 to 15 percent slopes—4 percent

### **Characteristics of the Old Camp Soil**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Convex, north- and west-facing crests and side slopes of foothills

*Parent material:* Residuum derived from basalt and andesite  
*Slope:* 4 to 15 percent  
*Elevation:* 5,400 to 6,500 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bluegrass, Thurber needlegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 50 percent pebbles  
*Depth:* 0 to 2 inches  
*Texture:* Gravelly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Depth:* 2 to 11 inches  
*Texture:* Very gravelly loam, very cobbly clay loam  
*Structure:* Angular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Mildly alkaline  
*Depth:* 11 inches  
*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 1.2 to 1.8 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Characteristics of the Allor Soil**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic  
*Positions on landscape:* Fan piedmont remnants  
*Parent material:* Mixed alluvium  
*Slope:* 2 to 8 percent  
*Elevation:* 5,400 to 6,200 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

#### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles  
*Depth:* 0 to 12 inches  
*Texture:* Gravelly loam  
*Structure:* Subangular blocky  
*Consistence:* Soft, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 12 to 34 inches  
*Texture:* Gravelly clay loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 34 to 60 inches  
*Texture:* Gravelly loamy sand, very gravelly loamy sand  
*Structure:* Massive  
*Consistence:* Very hard, firm  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 5.1 to 6.4 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Medium  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Characteristics of the Puett Soil**

*Classification:* Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow  
*Positions on landscape:* South- and east-facing side slopes of foothills  
*Parent material:* Residuum derived from weathered tuff and sandstone  
*Slope:* 15 to 30 percent  
*Elevation:* 5,400 to 6,500 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bluegrass, Wyoming big sagebrush, Indian ricegrass, black sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 55 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Depth:* 3 to 13 inches

*Texture:* Coarse sandy loam, sandy loam, gravelly loam

*Structure:* Massive

*Consistence:* Soft, friable

*Reaction:* Moderately alkaline

*Depth:* 13 inches

*Material:* Weathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately rapid

*Available water capacity:* 1.4 to 1.6 inches

*Water-supplying capacity:* 6 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—1; wind erodibility group—7

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Lithic Argixerolls, loamy-skeletal, mixed, mesic

*Positions on landscape:* Concave, higher side slopes of foothills

*Distinctive present vegetation:* Singleleaf pinyon, Utah juniper, Wyoming big sagebrush

#### **Inclusion 2**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Inclusion 3**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic

*Positions on landscape:* The upper, south-facing side slopes of foothills

*Distinctive present vegetation:* Black sagebrush, bluegrass

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Old Camp Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Allor Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Puett Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

### **Suitability and Limitations for Selected Uses**

#### **Old Camp Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones

*Daily cover for landfill:* Poor—depth to rock, small stones

*Shallow excavations:* Severe—depth to rock

*Local roads and streets:* Severe—depth to rock

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Allor Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—frost action, shrink-swell

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Puett Soil**

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—seepage, piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Old Camp and Puett soils—VIIs, nonirrigated; Allor soil—IIIe, irrigated, and VIIc, nonirrigated



*Range site:* Old Camp soil—027X007N; Allor soil—027X008N; Puett soil—025X025N; Inclusion 1—025X062N; Inclusion 2—027X008N; Inclusion 3—027X032N

## **2793—Old Camp-Laped association**

*Positions on landscape:* Mountains

### **Composition**

*Major components:*

Old Camp very cobbly loam, 15 to 30 percent slopes—55 percent

Laped very cobbly loam, 15 to 30 percent slopes—30 percent

*Contrasting inclusions:*

Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic, 15 to 30 percent slopes—7 percent

Xerollic Haplargids, fine-loamy, mixed, mesic, 30 to 50 percent slopes—6 percent

Xerollic Camborthids, loamy-skeletal, mixed, mesic, 8 to 15 percent slopes—2 percent

### **Characteristics of the Old Camp Soil**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* North- and east-facing side slopes of mountains

*Parent material:* Residuum derived from basalt and andesite

*Slope:* 15 to 30 percent

*Elevation:* 5,400 to 6,200 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, Thurber needlegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 20 percent pebbles

*Depth:* 0 to 2 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Depth:* 2 to 11 inches

*Texture:* Very gravelly loam, very cobbly clay loam

*Structure:* Angular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Depth:* 11 inches

*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 0.9 to 1.2 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Laped Soil**

*Classification:* Typic Durargids, loamy, mixed, mesic, shallow

*Positions on landscape:* South- and west-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from tuff and andesite

*Slope:* 15 to 30 percent

*Elevation:* 5,400 to 6,200 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bottlebrush squirreltail, shadscale, bud sagebrush

### **Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 6 to 18 inches

*Texture:* Gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 18 to 23 inches

*Material:* Indurated hardpan

*Depth:* 23 inches

*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches

*Depth to bedrock:* 20 to 30 inches

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 2.1 to 2.7 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—7  
*Hazard of erosion:* By water—moderate; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Convex, lower, south-facing side slopes of mountains  
*Distinctive present vegetation:* Wyoming big sagebrush, shadscale

#### **Inclusion 2**

*Classification:* Xerollic Haplargids, fine-loamy, mixed, mesic  
*Positions on landscape:* Concave, north-facing side slopes of mountains  
*Distinctive present vegetation:* Wyoming big sagebrush

#### **Inclusion 3**

*Classification:* Xerollic Camborthids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Colluvial toe slopes of mountains  
*Distinctive present vegetation:* Spiny hopsage, Wyoming big sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Old Camp Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### **Laped Soil**

*Wild herbaceous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Poor

### **Suitability and Limitations for Selected Uses**

#### **Old Camp Soil**

*Range seeding:* Poor—large stones, droughty  
*Roadfill:* Poor—depth to rock, large stones  
*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope, large stones

*Local roads and streets:* Severe—depth to rock, slope, large stones

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Laped Soil**

*Range seeding:* Poor—large stones, droughty, too arid

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—cemented pan, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, slope

*Shallow excavations:* Severe—depth to rock, cemented pan, slope

*Local roads and streets:* Severe—cemented pan, slope

*Pond reservoir areas:* Severe—cemented pan, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Old Camp and Laped soils—VIIs, nonirrigated

*Range site:* Old Camp soil—024X005N; Laped soil—024X002N; Inclusion 1—024X026N; Inclusion 2—024X005N; Inclusion 3—024X020N

## **2797—Old Camp-Colbar association**

*Positions on landscape:* Foothills

### **Composition**

*Major components:*

Old Camp gravelly loam, 30 to 50 percent slopes—45 percent

Colbar cobbly loam, 15 to 30 percent slopes—25 percent

Old Camp very cobbly loam, 8 to 15 percent slopes—15 percent

*Contrasting inclusions:*

Xerollic Camborthids, loamy-skeletal, mixed, mesic, 4 to 15 percent slopes—4 percent

Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic, 8 to 30 percent slopes—4 percent

Lithic Haplargids, loamy-skeletal, mixed, mesic, 15 to 50 percent slopes—4 percent

Rock outcrop—3 percent

### **Characteristics of the Old Camp Soil, Steep**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Convex, lower side slopes and shoulder slopes of foothills

*Parent material:* Residuum derived from basalt and andesite

*Slope:* 30 to 50 percent

*Elevation:* 5,800 to 6,200 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, Thurber needlegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 20 percent pebbles

*Depth:* 0 to 2 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Depth:* 2 to 11 inches

*Texture:* Very gravelly loam, very cobbly clay loam

*Structure:* Angular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Depth:* 11 inches

*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.2 to 1.6 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Colbar Soil**

*Classification:* Xerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* The higher side slopes of foothills

*Parent material:* Colluvium and residuum derived from rhyolite and andesite

*Slope:* 15 to 30 percent

*Elevation:* 5,900 to 6,200 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Needlegrass, bluegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 20 percent cobbles, 10 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Cobbly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Depth:* 3 to 22 inches

*Texture:* Cobbly loam, gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Depth:* 22 to 26 inches

*Texture:* Gravelly loam, cobbly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Depth:* 26 inches

*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 3.3 to 3.8 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.17; T value—2; wind erodibility group—6

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Old Camp Soil, Strongly Sloping**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Summits and shoulder slopes of foothills

*Parent material:* Residuum derived from basalt and andesite

*Slope:* 8 to 15 percent

*Elevation:* 5,800 to 6,200 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, Thurber needlegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 20 percent pebbles

*Depth:* 0 to 2 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Depth:* 2 to 11 inches

*Texture:* Very gravelly loam, very cobbly clay loam

*Structure:* Angular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Depth:* 11 inches

*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 0.9 to 1.2 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Xerollic Camborthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Concave foot slopes of foothills

*Distinctive present vegetation:* Mountain big sagebrush, bluebunch wheatgrass

#### **Inclusion 2**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Slightly convex, higher crests of foothills

*Distinctive present vegetation:* Black sagebrush, bluebunch wheatgrass

#### **Inclusion 3**

*Classification:* Lithic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* South-facing side slopes of foothills

*Distinctive present vegetation:* Shadscale, bud sagebrush

#### **Inclusion 4**

*Positions on landscape:* Scattered peaks

*Distinctive present vegetation:* None

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Old Camp Soil, Steep**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Colbar Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Old Camp Soil, Strongly Sloping**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Old Camp Soil, Steep**

*Range seeding:* Poor—erodes easily, droughty

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Colbar Soil**

*Range seeding:* Fair—too arid, large stones, droughty

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—large stones, slope

*Daily cover for landfill:* Poor—depth to rock, large stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—seepage, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Old Camp Soil, Strongly Sloping**

*Range seeding:* Poor—large stones, droughty

*Roadfill:* Poor—depth to rock, large stones  
*Topsoil:* Poor—depth to rock, small stones  
*Daily cover for landfill:* Poor—depth to rock, small stones  
*Shallow excavations:* Severe—depth to rock, large stones  
*Local roads and streets:* Severe—depth to rock, large stones  
*Pond reservoir areas:* Severe—depth to rock, slope  
*Embankments, dikes, and levees:* Severe—large stones  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Old Camp soil, steep—VIIe, nonirrigated; Colbar soil—Vle, nonirrigated; Old Camp soil, strongly sloping—VIIs, nonirrigated  
*Range site:* Old Camp and Colbar soils—024X005N; Inclusion 1—025X014N; Inclusion 2—024X030N; Inclusion 3—024X002N

## **2798—Old Camp-Atlow-Osoll association**

*Positions on landscape:* Foothills

### **Composition**

*Major components:*

Old Camp gravelly loam, 15 to 30 percent slopes—40 percent

Atlow very gravelly loam, 30 to 50 percent slopes—30 percent

Osoll very gravelly loam, 30 to 50 percent slopes—15 percent

*Contrasting inclusions:*

Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic, 4 to 15 percent slopes—6 percent

Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 30 to 50 percent slopes—5 percent

Xerollic Camborthids, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—2 percent

Rock outcrop—2 percent

### **Characteristics of the Old Camp Soil**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Concave, lower side slopes and shoulder slopes of foothills

*Parent material:* Residuum derived from basalt and andesite

*Slope:* 15 to 30 percent

*Elevation:* 5,800 to 6,200 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, Thurber needlegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 20 percent pebbles

*Depth:* 0 to 2 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Depth:* 2 to 11 inches

*Texture:* Very gravelly loam, very cobbly clay loam

*Structure:* Angular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Depth:* 11 inches

*Material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.2 to 1.6 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Atlow Soil**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* The upper side slopes of foothills

*Parent material:* Residuum derived from chert, argillite, shale, and altered tuff

*Slope:* 30 to 50 percent

*Elevation:* 5,800 to 6,200 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 46 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Black sagebrush, bluegrass, Indian ricegrass

### **Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 40 percent pebbles

*Depth:* 0 to 3 inches  
*Texture:* Very gravelly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 3 to 14 inches  
*Texture:* Very gravelly clay loam  
*Structure:* Angular blocky  
*Consistence:* Hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 14 inches  
*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 1.1 to 1.3 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—7  
*Hazard of erosion:* By water—severe; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Characteristics of the Osoll Soil**

*Classification:* Typic Durorthids, loamy-skeletal, mixed, mesic, shallow  
*Positions on landscape:* Eroded side slopes of foothills  
*Parent material:* Colluvium that includes loess over residuum  
*Slope:* 30 to 50 percent  
*Elevation:* 5,800 to 6,200 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bottlebrush squirreltail, shadscale, bud sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 5 percent cobbles, 50 percent pebbles  
*Depth:* 0 to 5 inches  
*Texture:* Very gravelly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline

*Depth:* 5 to 12 inches  
*Texture:* Very gravelly loam, very gravelly fine sandy loam

*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Strongly alkaline

*Depth:* 12 to 35 inches  
*Material:* Indurated hardpan  
*Structure:* Platy  
*Consistence:* Extremely hard, extremely firm

*Depth:* 35 inches  
*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to the hardpan:* 8 to 14 inches  
*Depth to bedrock:* 20 to 40 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately rapid  
*Available water capacity:* 0.6 to 1.0 inch  
*Water-supplying capacity:* 6 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—7  
*Hazard of erosion:* By water—severe; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic  
*Positions on landscape:* Crests of foothills  
*Distinctive present vegetation:* Black sagebrush, bluegrass

##### **Inclusion 2**

*Classification:* Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic  
*Positions on landscape:* Convex, eroded side slopes below areas of Rock outcrop on foothills  
*Distinctive present vegetation:* Wyoming big sagebrush, desert needlegrass

##### **Inclusion 3**

*Classification:* Xerollic Camborthids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Interhill drainageways  
*Distinctive present vegetation:* Big sagebrush, bluebunch wheatgrass

##### **Inclusion 4**

*Positions on landscape:* Scattered peaks

*Distinctive present vegetation:* None

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Old Camp Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Atlow Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Osoll Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

### **Suitability and Limitations for Selected Uses**

#### **Old Camp Soil**

*Range seeding:* Poor—erodes easily, droughty

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Atlow Soil**

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Osoll Soil**

*Range seeding:* Poor—droughty, small stones, too arid

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—cemented pan, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, cemented pan, slope

*Local roads and streets:* Severe—cemented pan, slope

*Pond reservoir areas:* Severe—cemented pan, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Old Camp, Atlow, and Osoll soils—VIIs, nonirrigated

*Range site:* Old Camp soil—024X005N; Atlow soil—024X030N; Osoll soil—024X002N; Inclusion 1—024X030N; Inclusion 2—024X045N; Inclusion 3—025X013N; Inclusion 4—none

## **3001—Barrier-Kobeh association**

*Positions on landscape:* Fan piedmonts

### **Composition**

*Major components:*

Barrier cobbly loam, 4 to 15 percent slopes—65 percent  
Kobeh gravelly fine sandy loam, 2 to 8 percent slopes—20 percent

*Contrasting inclusions:*

Xerollic Durargids, loamy, mixed, frigid, shallow, 2 to 8 percent slopes—8 percent

Haploxerollic Durorthids, loamy-skeletal, mixed, frigid, 2 to 8 percent slopes—5 percent

Haploxerollic Nadurargids, fine, montmorillonitic, frigid, 2 to 8 percent slopes—2 percent

### **Characteristics of the Barrier Soil**

*Classification:* Haploxerollic Durorthids, loamy, mixed, frigid

*Positions on landscape:* Summits and side slopes of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 4 to 15 percent

*Elevation:* 6,800 to 7,400 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 90 days

*Dominant present vegetation:* Indian ricegrass, needlegrass, black sagebrush, small rabbitbrush

### **Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 15 percent pebbles

*Depth:* 0 to 7 inches

*Texture:* Cobbly loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 7 to 12 inches

*Texture:* Gravelly loam, gravelly sandy loam, fine sandy loam

*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 8 millimhos per centimeter  
*Sodicity (SAR):* 5 to 13

*Depth:* 12 to 27 inches  
*Material:* Cemented hardpan

*Depth:* 27 to 60 inches  
*Texture:* Very cobbly loamy sand  
*Structure:* Massive  
*Consistence:* Hard, firm  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 8 millimhos per centimeter  
*Sodicity (SAR):* 5 to 13

#### **Soil and Water Features**

*Depth to the hardpan:* 10 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 1.2 to 1.7 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Characteristics of the Kobeh Soil**

*Classification:* Durixerollic Camborthids, loamy-skeletal, mixed, frigid  
*Positions on landscape:* Inset fans  
*Parent material:* Mixed alluvium that includes volcanic ash  
*Slope:* 2 to 8 percent  
*Elevation:* 6,800 to 7,400 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 45 degrees F  
*Frost-free season:* About 90 days  
*Dominant present vegetation:* Indian ricegrass, needleandthread, Wyoming big sagebrush

#### **Typical Profile**

*Depth:* 0 to 7 inches  
*Texture:* Gravelly fine sandy loam  
*Structure:* Subangular blocky  
*Consistence:* Soft, very friable  
*Reaction:* Neutral  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 7 to 20 inches  
*Texture:* Gravelly sandy loam, gravelly fine sandy loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Neutral  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 20 to 60 inches  
*Texture:* Stratified gravelly fine sandy loam to very gravelly sand  
*Structure:* Massive  
*Consistence:* Hard, firm  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately rapid  
*Available water capacity:* 4.6 to 6.0 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.17; T value—5; wind erodibility group—4  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Xerollic Durargids, loamy, mixed, frigid, shallow  
*Positions on landscape:* Slightly convex shoulder slopes of fan piedmont remnants  
*Distinctive present vegetation:* Black sagebrush, Indian ricegrass

##### **Inclusion 2**

*Classification:* Haploxerollic Durorthids, loamy-skeletal, mixed, frigid  
*Positions on landscape:* Foot slopes of fan piedmont remnants  
*Distinctive present vegetation:* Black sagebrush, Indian ricegrass

##### **Inclusion 3**

*Classification:* Haploxerollic Nadurargids, fine, montmorillonitic, frigid  
*Positions on landscape:* Summits of fan piedmont remnants  
*Distinctive present vegetation:* Shadscale, bud sagebrush



### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Barrier Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

#### **Kobeh Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Barrier Soil**

*Range seeding:* Poor—droughty, excess salt

*Roadfill:* Good

*Topsoil:* Poor—cemented pan, large stones

*Daily cover for landfill:* Poor—cemented pan, large stones

*Shallow excavations:* Severe—cemented pan, cutbanks cave

*Local roads and streets:* Moderate—cemented pan, slope, frost action

*Pond reservoir areas:* Severe—cemented pan, slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Kobeh Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

### **Interpretive Groups**

*Land capability classification:* Barrier soil—VIIc, nonirrigated; Kobeh soil—IVe, irrigated, and VIIc, nonirrigated

*Range site:* Barrier soil—028B011N; Kobeh soil—028B010N; Inclusions 1 and 2—028B011N; Inclusion 3—028B017N

### **3011—Defler-Orovada association**

*Positions on landscape:* Broad inset fans and fan skirts

### **Composition**

*Major components:*

Defler gravelly fine sandy loam, 0 to 2 percent slopes—70 percent

Orovada gravelly fine sandy loam, gravelly substratum, 0 to 2 percent slopes—20 percent

*Contrasting inclusions:*

Silverado sandy loam, 0 to 4 percent slopes—5 percent

Orovada fine sandy loam, gullied, 0 to 4 percent slopes—3 percent

Wholan very fine sandy loam, 0 to 4 percent slopes—2 percent

### **Characteristics of the Defler Soil**

*Classification:* Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic

*Positions on landscape:* Smooth to slightly convex inset fans

*Parent material:* Mixed alluvium that includes loess and volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 6,400 to 6,800 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, winterfat

### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 4 to 38 inches

*Texture:* Very gravelly fine sandy loam, very gravelly sandy loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 38 to 60 inches

*Texture:* Stratified very gravelly sandy loam to extremely gravelly coarse sand

*Structure:* Massive

*Consistence:* Hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Occasional for very brief periods in December through August

*Permeability:* Moderately rapid

*Available water capacity:* 3.0 to 4.8 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Orovada Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Inset fan remnants

*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 0 to 2 percent

*Elevation:* 6,400 to 6,800 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

### **Typical Profile**

*Depth:* 0 to 5 inches

*Texture:* Gravelly fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 5 to 15 inches

*Texture:* Fine sandy loam, loam, silt loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 15 to 40 inches

*Texture:* Fine sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 40 to 60 inches

*Texture:* Stratified gravelly sandy loam to very gravelly sand

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 6 to 8 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.20; T value—5; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, frigid

*Positions on landscape:* The upper fan skirt remnants

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Inclusion 2**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Recently dissected inset fans

*Distinctive present vegetation:* Wyoming big sagebrush, basin big sagebrush

#### **Inclusion 3**

*Classification:* Typic Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* The lower, convex fan skirt margins

*Distinctive present vegetation:* Indian ricegrass, winterfat

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Defler Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

#### **Orovada Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Defler Soil**

*Range seeding:* Poor—droughty, too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim  
*Daily cover for landfill:* Poor—small stones  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Severe—flooding  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—seepage  
*Sand:* Improbable source—small stones  
*Gravel:* Probable source

#### **Orovada Soil**

*Range seeding:* Fair—too arid, small stones  
*Roadfill:* Good  
*Topsoil:* Poor—area reclaim  
*Daily cover for landfill:* Fair—thin layer  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Moderate—frost action  
*Pond reservoir areas:* Moderate—seepage  
*Embankments, dikes, and levees:* Severe—piping  
*Sand:* Probable source  
*Gravel:* Improbable source—too sandy

#### **Interpretive Groups**

*Land capability classification:* Defler soil—IVw, irrigated, and VIIw, nonirrigated; Orovada soil—IIc, irrigated, and VIc, nonirrigated  
*Range site:* Defler soil—028B013N; Orovada soil—028B010N; Inclusion 1—028B010N; Inclusion 2—028B009N; Inclusion 3—028B013N

### **3050—Novacan cobbly loam, 2 to 8 percent slopes**

*Positions on landscape:* Fan piedmonts

#### **Composition**

*Major component:*  
 Novacan cobbly loam, 2 to 8 percent slopes—85 percent  
*Contrasting inclusions:*  
 Durixerollic Camborthids, coarse-loamy, mixed, mesic, 2 to 8 percent slopes—6 percent  
 Haploxerollic Durorthids, loamy, mixed, mesic, shallow, 2 to 8 percent slopes—6 percent  
 Typic Nadurargids, fine, montmorillonitic, mesic, 2 to 8 percent slopes—3 percent

#### **Characteristics of the Novacan Soil**

*Classification:* Haploxerollic Durargids, fine, montmorillonitic, mesic  
*Positions on landscape:* Summits of fan piedmont remnants  
*Parent material:* Mixed volcanic alluvium  
*Slope:* 2 to 8 percent  
*Elevation:* 6,500 to 7,000 feet

*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 44 degrees F  
*Frost-free season:* About 90 days  
*Dominant present vegetation:* Indian ricegrass, needleandthread, black sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 25 percent cobbles, 10 percent pebbles  
*Depth:* 0 to 5 inches  
*Texture:* Cobbly loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Neutral  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 5 to 24 inches  
*Texture:* Clay, gravelly clay  
*Structure:* Prismatic  
*Consistence:* Hard, firm  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 24 to 45 inches  
*Material:* Cemented hardpan  
*Depth:* 45 to 60 inches  
*Texture:* Very cobbly loamy sand  
*Structure:* Massive  
*Consistence:* Hard, firm  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter

#### **Soil and Water Features**

*Depth to the hardpan:* 20 to 30 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Very slow  
*Available water capacity:* 3.0 to 3.7 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.24; T value—2; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* High  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Contrasting Inclusions**

*Inclusion 1*  
*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Inset fans  
*Distinctive present vegetation:* Wyoming big sagebrush

**Inclusion 2**

*Classification:* Haploxerollic Durorthids, loamy, mixed, mesic, shallow

*Positions on landscape:* Side slopes of fan piedmont remnants

*Distinctive present vegetation:* Black sagebrush

**Inclusion 3**

*Classification:* Typic Nadurargids, fine, montmorillonitic, mesic

*Positions on landscape:* Slightly convex summits of fan piedmont remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses**

*Range seeding:* Poor—rooting depth

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—too clayey, cemented pan, small stones

*Daily cover for landfill:* Poor—cemented pan, large stones

*Shallow excavations:* Severe—cemented pan, cutbanks cave

*Local roads and streets:* Severe—shrink-swell, low strength

*Pond reservoir areas:* Moderate—seepage, cemented pan, slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Novacan soil—VIIIs, nonirrigated

*Range site:* Novacan soil—028B011N; Inclusion 1—028B010N; Inclusion 2—028B011N; Inclusion 3—028B017N

**3071—Allor-Wieland association**

*Positions on landscape:* Fan piedmonts

**Composition**

*Major components:*

Allor gravelly loam, 4 to 15 percent slopes—50 percent

Wieland gravelly loam, 4 to 15 percent slopes—35 percent

**Contrasting inclusions:**

Haploxerollic Durargids, fine-loamy, mixed, mesic, 2 to 8 percent slopes—7 percent

Durixerollic Haplargids, fine, montmorillonitic, mesic, 0 to 4 percent slopes—4 percent

Haploxerollic Durargids, fine, montmorillonitic, mesic, 4 to 15 percent slopes—4 percent

**Characteristics of the Allor Soil**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* The lower fan piedmont remnants and foot slopes

*Parent material:* Mixed alluvium

*Slope:* 4 to 15 percent

*Elevation:* 6,200 to 6,800 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

**Typical Profile**

*Rock fragments on surface:* 20 percent pebbles

*Depth:* 0 to 12 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 12 to 34 inches

*Texture:* Gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 34 to 60 inches

*Texture:* Gravelly loamy sand, very gravelly loamy sand

*Structure:* Massive

*Consistence:* Very hard, firm

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 5.1 to 6.4 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

### **Characteristics of the Wieland Soil**

*Classification:* Durixerollic Haplargids, fine, montmorillonitic, mesic  
*Positions on landscape:* The higher summits of fan piedmont remnants  
*Parent material:* Mixed alluvium that includes loess and volcanic ash  
*Slope:* 4 to 15 percent  
*Elevation:* 6,200 to 6,800 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Indian ricegrass, needlegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 20 percent pebbles  
*Depth:* 0 to 8 inches  
*Texture:* Gravelly loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 8 to 20 inches  
*Texture:* Gravelly clay  
*Structure:* Prismatic  
*Consistence:* Hard, firm  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 20 to 60 inches  
*Texture:* Gravelly loam, gravelly sandy loam  
*Structure:* Massive  
*Consistence:* Hard, firm  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 6 to 9 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Medium  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.32; T value—5; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Haploxerollic Durargids, fine-loamy, mixed, mesic

*Positions on landscape:* Nonburied fan piedmont remnants

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Inclusion 2**

*Classification:* Durixerollic Haplargids, fine, montmorillonitic, mesic

*Positions on landscape:* Fan drainageways

*Distinctive present vegetation:* Basin wildrye, basin big sagebrush

#### **Inclusion 3**

*Classification:* Haploxerollic Durargids, fine, montmorillonitic, mesic

*Positions on landscape:* Side slopes of fan piedmont remnants

*Distinctive present vegetation:* Wyoming big sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Allor Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Wieland Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Allor Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—frost action, shrink-swell, slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Wieland Soil**

*Range seeding:* Poor—rooting depth

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Moderate—too clayey, slope

*Local roads and streets:* Severe—low strength, shrink-swell

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Allor soil—IVe, irrigated, and VIIc, nonirrigated; Wieland soil—VIs, nonirrigated

*Range site:* Allor and Wieland soils—028B010N; Inclusion 1—028B010N; Inclusion 2—028B003N; Inclusion 3—028B010N

## **3072—Allor-Orovada association, moderately sloping**

*Positions on landscape:* Fan piedmonts

### **Composition**

*Major components:*

Allor gravelly loam, 4 to 8 percent slopes—55 percent

Orovada fine sandy loam, 2 to 4 percent slopes—30 percent

*Contrasting inclusions:*

Durixerollic Haplargids, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—5 percent

Durixerollic Camborthids, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—5 percent

Durixerollic Haplargids, fine-loamy, mixed, mesic, 4 to 8 percent slopes—5 percent

### **Characteristics of the Allor Soil**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* Fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 4 to 8 percent

*Elevation:* 5,800 to 6,300 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 12 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 12 to 34 inches

*Texture:* Gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 34 to 60 inches

*Texture:* Gravelly loamy sand, very gravelly loamy sand

*Structure:* Massive

*Consistence:* Very hard, firm

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 5.1 to 6.4 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Orovada Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Inset fans

*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 5,800 to 6,300 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

### **Typical Profile**

*Depth:* 0 to 8 inches

*Texture:* Fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 8 to 20 inches

*Texture:* Fine sandy loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 20 to 65 inches

*Texture:* Stratified fine sandy loam to silt loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 8.4 to 9.6 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* The upper part of fan piedmont remnants

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Inclusion 2**

*Classification:* Durixerollic Camborthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Adjacent to channels on inset fans

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Inclusion 3**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* Fan aprons

*Distinctive present vegetation:* Black sagebrush, bluegrass, shadscale

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Allor Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Orovada Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Allor Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—frost action, shrink-swell

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Orovada Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Fair—small stones, thin layer

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Allor soil—IIIe, irrigated, and VIIc, nonirrigated; Orovada soil—IIe, irrigated, and VIc, nonirrigated

*Range site:* Allor and Orovada soils—028B010N; Inclusions 1 and 2—028B010N; Inclusion 3—024X030N

### **3073—Allor-Kelk association**

*Positions on landscape:* Fan piedmonts, fan skirts

### **Composition**

*Major components:*

Allor gravelly loam, 0 to 2 percent slopes—50 percent

Kelk very fine sandy loam, lacustrine substratum, 0 to 2 percent slopes—35 percent

*Contrasting inclusions:*

Durixerollic Camborthids, coarse-silty, mixed, mesic, 0 to 2 percent slopes—8 percent

Durixerollic Camborthids, fine-loamy, mixed, mesic, 0 to 2 percent slopes—7 percent

**Characteristics of the Allor Soil**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* Fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 0 to 2 percent

*Elevation:* 6,300 to 6,500 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

**Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 12 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 12 to 34 inches

*Texture:* Gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 34 to 60 inches

*Texture:* Gravelly loamy sand, very gravelly loamy sand

*Structure:* Massive

*Consistence:* Very hard, firm

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 5.1 to 6.4 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

**Characteristics of the Kelk Soil**

*Classification:* Durixerollic Camborthids, fine-silty, mixed, mesic

*Positions on landscape:* Fan skirts

*Parent material:* Loess that includes volcanic ash, mixed alluvium

*Slope:* 0 to 2 percent

*Elevation:* 6,300 to 6,500 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass

**Typical Profile**

*Depth:* 0 to 4 inches

*Texture:* Very fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 4 to 12 inches

*Texture:* Silt loam

*Structure:* Massive

*Consistence:* Hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 12 to 40 inches

*Texture:* Silt loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 40 to 60 inches

*Texture:* Silty clay loam

*Structure:* Massive

*Consistence:* Hard, firm

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Rare

*Permeability:* Slow

*Available water capacity:* 9 to 11 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Slow

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—moderate

*Potential for frost action:* Moderate



### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durixerollic Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Fan aprons

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Inclusion 2**

*Classification:* Durixerollic Camborthids, fine-loamy, mixed, mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Basin big sagebrush, basin wildrye

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Allor Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Kelk Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Allor Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—frost action, shrink-swell

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Kelk Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Fair—thin layer, shrink-swell

*Topsoil:* Good

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—flooding, frost action, shrink-swell

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Allor soil—III<sub>s</sub>, irrigated, and VI<sub>l</sub>c, nonirrigated; Kelk soil—II<sub>c</sub>, irrigated, and VI<sub>l</sub>c, nonirrigated

*Range site:* Allor and Kelk soils—028B010N; Inclusion 1—028B010N; Inclusion 2—028B003N

### **3074—Allor-Orovada association, nearly level**

*Positions on landscape:* Fan piedmonts, fan skirts

### **Composition**

*Major components:*

Allor fine sandy loam, 0 to 2 percent slopes—50 percent

Orovada very fine sandy loam, 0 to 2 percent slopes—35 percent

*Contrasting inclusions:*

Duric Camborthids, coarse-loamy, mixed, mesic, 0 to 2 percent slopes—7 percent

Aeric Halaquepts, coarse-loamy, mixed (calcareous), mesic, 0 to 2 percent slopes—5 percent

Wholan silt loam, 0 to 2 percent slopes—3 percent

### **Characteristics of the Allor Soil**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* Fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 0 to 2 percent

*Elevation:* 6,100 to 6,300 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 12 inches

*Texture:* Fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 12 to 34 inches

*Texture:* Gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 34 to 60 inches

*Texture:* Gravelly loamy sand, very gravelly loamy sand

*Structure:* Massive

*Consistence:* Very hard, firm

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 5.1 to 6.4 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.32; T value—5; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

**Characteristics of the Orovada Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Fan skirts  
*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium  
*Slope:* 0 to 2 percent  
*Elevation:* 6,100 to 6,300 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

**Typical Profile**

*Depth:* 0 to 8 inches  
*Texture:* Very fine sandy loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 8 to 20 inches  
*Texture:* Fine sandy loam, loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 20 to 65 inches  
*Texture:* Stratified fine sandy loam to silt loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 8.8 to 10.0 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.49; T value—5; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

**Contrasting Inclusions****Inclusion 1**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* The lower fan skirt margins  
*Distinctive present vegetation:* Shadscale, bud sagebrush

**Inclusion 2**

*Classification:* Aeris Halaquepts, coarse-loamy, mixed, mesic  
*Positions on landscape:* Adjacent lagoon remnants  
*Distinctive present vegetation:* Black greasewood, basin big sagebrush

**Inclusion 3**

*Classification:* Typic Camborthids, coarse-silty, mixed, mesic  
*Positions on landscape:* Inset fans  
*Distinctive present vegetation:* Winterfat, Indian ricegrass

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Allor Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

**Orovada Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses****Allor Soil**

*Range seeding:* Fair—too arid  
*Roadfill:* Good  
*Topsoil:* Poor—small stones, area reclaim  
*Daily cover for landfill:* Poor—small stones  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Moderate—frost action, shrink-swell  
*Pond reservoir areas:* Moderate—seepage  
*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

### **Orovada Soil**

*Range seeding:* Fair—too arid  
*Roadfill:* Good  
*Topsoil:* Fair—small stones, thin layer  
*Daily cover for landfill:* Good  
*Shallow excavations:* Slight  
*Local roads and streets:* Moderate—frost action  
*Pond reservoir areas:* Moderate—seepage  
*Embankments, dikes, and levees:* Severe—piping  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Allor soil—III<sub>s</sub>, irrigated, and VII<sub>c</sub>, nonirrigated; Orovada soil—II<sub>c</sub>, irrigated, and VI<sub>c</sub>, nonirrigated  
*Range site:* Allor and Orovada soils—028B010N;  
 Inclusion 1—024X002N; Inclusion 2—024X022N;  
 Inclusion 3—024X004N

## **3080—Zaidy-Ricert association**

*Positions on landscape:* Fan piedmonts

### **Composition**

#### **Major components:**

Zaidy very gravelly sandy loam, 2 to 8 percent slopes—60 percent  
 Ricert gravelly fine sandy loam, 2 to 8 percent slopes—25 percent

#### **Contrasting inclusions:**

Durixerollic Haplargids, coarse-loamy, mixed, mesic, 2 to 4 percent slopes—4 percent  
 Durixerollic Haplargids, loamy-skeletal, mixed, mesic, 4 to 8 percent slopes—4 percent  
 Xerollic Durargids, loamy-skeletal, mixed, mesic, shallow, 8 to 15 percent slopes—4 percent  
 Xerollic Haplargids, loamy, mixed, mesic, 8 to 15 percent slopes—3 percent

### **Characteristics of the Zaidy Soil**

*Classification:* Haploxerollic Durargids, fine-loamy, mixed, mesic  
*Positions on landscape:* The upper fan piedmont remnants  
*Parent material:* Mixed alluvium  
*Slope:* 2 to 8 percent  
*Elevation:* 5,700 to 6,000 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 47 degrees F  
*Frost-free season:* About 100 days

*Dominant present vegetation:* Indian ricegrass, bluegrass, black sagebrush

### **Typical Profile**

*Rock fragments on surface:* 5 percent cobbles, 50 percent pebbles

*Depth:* 0 to 5 inches  
*Texture:* Very gravelly sandy loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5  
*Depth:* 5 to 25 inches  
*Texture:* Loam, clay loam, gravelly clay loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 6 to 13  
*Depth:* 25 to 60 inches  
*Material:* Cemented hardpan

### **Soil and Water Features**

*Depth to the hardpan:* 20 to 30 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 2.8 to 3.4 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Medium  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.05; T value—2; wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—moderate  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

### **Characteristics of the Ricert Soil**

*Classification:* Duric Natrargids, fine-loamy, mixed, mesic  
*Positions on landscape:* The lower fan piedmont remnants  
*Parent material:* Thin loess deposits over mixed alluvium  
*Slope:* 2 to 8 percent  
*Elevation:* 5,700 to 6,000 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 100 days  
*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bluegrass

**Typical Profile**

*Rock fragments on surface:* 20 percent pebbles

*Depth:* 0 to 6 inches

*Texture:* Gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 6 to 18 inches

*Texture:* Loam, clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Strongly alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

*Depth:* 18 to 60 inches

*Texture:* Very gravelly sandy loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 4 to 6 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.20; T value—5; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

**Contrasting Inclusions****Inclusion 1**

*Classification:* Durixerollic Haplargids, coarse-loamy, mixed, mesic

*Positions on landscape:* Fan drainageways

*Distinctive present vegetation:* Black sagebrush

**Inclusion 2**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Fan aprons

*Distinctive present vegetation:* Wyoming big sagebrush, needleandthread

**Inclusion 3**

*Classification:* Xerollic Durargids, loamy-skeletal, mixed, mesic, shallow

*Positions on landscape:* The highest areas of fan piedmont remnants

*Distinctive present vegetation:* Black sagebrush

**Inclusion 4**

*Classification:* Xerollic Haplargids, loamy, mixed, mesic

*Positions on landscape:* Side slopes of fan piedmont remnants near the front of mountains

*Distinctive present vegetation:* Wyoming big sagebrush, needleandthread

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Zaidy Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Ricert Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

**Suitability and Limitations for Selected Uses****Zaidy Soil**

*Range seeding:* Poor—small stones

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—small stones

*Daily cover for landfill:* Poor—cemented pan

*Shallow excavations:* Severe—cemented pan

*Local roads and streets:* Moderate—cemented pan, shrink-swell

*Pond reservoir areas:* Moderate—cemented pan, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Ricert Soil**

*Range seeding:* Poor—too arid, excess sodium

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim, excess sodium

*Daily cover for landfill:* Poor—seepage, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage, excess sodium

*Sand:* Probable source

*Gravel:* Probable source

**Interpretive Groups**

*Land capability classification:* Zaidy soil—IVs, irrigated,

and VIIIs, nonirrigated; Ricert soil—IVe, irrigated, and VIIIs, nonirrigated

*Range site:* Zaidy soil—028B011N; Ricert soil—024X002N; Inclusion 1—028B016N; Inclusion 2—028B010N; Inclusion 3—028B016N; Inclusion 4—028B010N

### **3081—Zaidy-Allor association**

*Positions on landscape:* Fan piedmonts

#### **Composition**

*Major components:*

Zaidy very gravelly fine sandy loam, 8 to 15 percent slopes—55 percent

Allor gravelly loam, 4 to 15 percent slopes—30 percent

*Contrasting inclusions:*

Durixerollic Haplargids, fine-loamy, mixed, mesic, 2 to 8 percent slopes—8 percent

Haploxerollic Durargids, fine-loamy, mixed, mesic, 15 to 30 percent slopes—4 percent

Durixerollic Haplargids, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—3 percent

#### **Characteristics of the Zaidy Soil**

*Classification:* Haploxerollic Durargids, fine-loamy, mixed, mesic

*Positions on landscape:* The higher fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 8 to 15 percent

*Elevation:* 6,700 to 6,800 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Indian ricegrass, bluegrass, black sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 5 percent cobbles, 50 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Very gravelly fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 5 to 25 inches

*Texture:* Loam, clay loam, gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 6 to 13

*Depth:* 25 to 60 inches

*Material:* Cemented hardpan

#### **Soil and Water Features**

*Depth to the hardpan:* 20 to 30 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 2.8 to 3.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.10; T value—2; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—moderate

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Allor Soil**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* The lower fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 4 to 15 percent

*Elevation:* 6,700 to 6,800 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

#### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 12 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 12 to 34 inches

*Texture:* Gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 34 to 60 inches

*Texture:* Gravelly loamy sand, very gravelly loamy sand

*Structure:* Massive

*Consistence:* Very hard, firm

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 5.0 to 7.5 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* Fan aprons

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Inclusion 2**

*Classification:* Haploxerollic Durargids, fine-loamy, mixed, mesic

*Positions on landscape:* South-facing side slopes of fan piedmont remnants

*Distinctive present vegetation:* Indian ricegrass, galleta, Wyoming big sagebrush, shadscale

#### **Inclusion 3**

*Classification:* Durixerollic Durargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Wyoming big sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Zaidy Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Allor Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Zaidy Soil**

*Range seeding:* Poor—small stones

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—small stones

*Daily cover for landfill:* Poor—cemented pan

*Shallow excavations:* Severe—cemented pan

*Local roads and streets:* Moderate—cemented pan, shrink-swell

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Allor Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—frost action, shrink-swell, slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Zaidy soil—IVs, irrigated, and VIIs, nonirrigated; Allor soil—IVe, irrigated, and VIIc, nonirrigated

*Range site:* Zaidy soil—028B011N; Allor soil—028B010N; Inclusion 1—028B010N; Inclusion 2—024X045N; Inclusion 3—028B010N

## **3091—Packer-Newlands association**

*Positions on landscape:* Mountains

### **Composition**

*Major components:*

Packer extremely gravelly loam, 15 to 30 percent slopes—60 percent

Packer extremely cobbly loam, 8 to 15 percent slopes—15 percent

Newlands loam, 8 to 15 percent slopes—10 percent

*Contrasting inclusions:*

Argic Cryoborolls, clayey-skeletal, montmorillonitic, 8 to 15 percent slopes—8 percent

Argic Lithic Cryoborolls, loamy-skeletal, mixed, 8 to 15 percent slopes—4 percent

Rock outcrop—3 percent

### **Characteristics of the Packer Soil**

*Classification:* Argic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* South-, east-, and west-facing side slopes of mountains

*Parent material:* Mixed residuum that includes loess and volcanic ash

*Slope:* 15 to 30 percent  
*Elevation:* 7,800 to 10,000 feet  
*Average annual precipitation:* About 15 inches  
*Average annual air temperature:* About 42 degrees F  
*Frost-free season:* About 50 days  
*Dominant present vegetation:* Idaho fescue, bluegrass,  
 low sagebrush, black sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 20 percent cobbles and stones, 70 percent pebbles

*Depth:* 0 to 10 inches

*Texture:* Extremely gravelly loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 10 to 21 inches

*Texture:* Extremely cobbly clay loam, extremely cobbly loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 21 to 60 inches

*Texture:* Extremely cobbly sandy loam, extremely cobbly loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Neutral

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 3.8 to 5.5 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.10; T value—3; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Packer Soil, Cobbly**

*Classification:* Argic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* Windswept crests of mountains

*Parent material:* Mixed residuum that includes loess and volcanic ash

*Slope:* 8 to 15 percent

*Elevation:* 7,800 to 10,000 feet

*Average annual precipitation:* About 15 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 50 days

*Dominant present vegetation:* Idaho fescue, bluegrass, low sagebrush, black sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 40 percent cobbles, 30 percent pebbles

*Depth:* 0 to 10 inches

*Texture:* Extremely cobbly loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 10 to 21 inches

*Texture:* Extremely cobbly sandy loam, extremely cobbly loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 21 to 60 inches

*Texture:* Extremely cobbly clay loam, extremely cobbly loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Neutral

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 3.4 to 5.2 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.15; T value—5; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Newlands Soil**

*Classification:* Argic Cryoborolls, fine-loamy, mixed

*Positions on landscape:* Concave, north-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from andesite and rhyolite

*Slope:* 8 to 15 percent

*Elevation:* 7,800 to 10,000 feet

*Average annual precipitation:* About 15 inches

*Average annual air temperature:* About 41 degrees F

*Frost-free season:* About 50 days

*Dominant present vegetation:* Mountain brome, needlegrass, mountain big sagebrush

**Typical Profile**

*Rock fragments on surface:* 10 percent pebbles

*Depth:* 0 to 10 inches

*Texture:* Loam

*Structure:* Granular

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 10 to 46 inches

*Texture:* Gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 46 inches

*Material:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 40 to 60 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 5.5 to 6.7 inches

*Water-supplying capacity:* 14 inches

*Runoff:* Medium

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.28; T value—3; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

**Contrasting Inclusions****Inclusion 1**

*Classification:* Argic Cryoborolls, clayey-skeletal, montmorillonitic

*Positions on landscape:* The lower, north-facing side slopes of mountains

*Distinctive present vegetation:* Low sagebrush, Idaho fescue

**Inclusion 2**

*Classification:* Argic Lithic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* Crests of mountains adjacent to areas of Rock outcrop

*Distinctive present vegetation:* Low sagebrush, black sagebrush

**Inclusion 3**

*Positions on landscape:* Escarpments

*Distinctive present vegetation:* None

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Packer Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Packer Soil, Cobbly**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Newlands Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses****Packer Soil**

*Range seeding:* Poor—small stones

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage, large stones

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

**Packer Soil, Cobbly**

*Range seeding:* Poor—large stones

*Roadfill:* Poor—large stones

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Severe—large stones

*Local roads and streets:* Severe—large stones

*Pond reservoir areas:* Severe—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage, large stones

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

**Newlands Soil**

*Range seeding:* Good

*Roadfill:* Fair—depth to rock, thin layer

*Topsoil:* Poor—small stones, depth to rock

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Moderate—depth to rock, slope

*Local roads and streets:* Moderate—slope, shrink-swell, frost action

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Packer soils—VIIs, nonirrigated; Newlands soil—IVe, irrigated, and VIc, nonirrigated



*Range site:* Packer soils—024X016N; Newlands soil—028B029N; Inclusion 1—024X027N; Inclusion 2—024X016N; Inclusion 3—none

### **3092—Packer-Hapgood-Rock outcrop association**

*Positions on landscape:* Mountains

#### **Composition**

*Major components:*

Packer extremely gravelly loam, 8 to 15 percent slopes—50 percent

Hapgood gravelly loam, 8 to 15 percent slopes—20 percent

Rock outcrop—15 percent

*Contrasting inclusions:*

Layview extremely cobbly loam, 4 to 15 percent slopes—8 percent

Entic Cryoborolls, loamy-skeletal, mixed, 8 to 15 percent slopes—4 percent

Pachic Cryoborolls, loamy-skeletal, mixed, 15 to 30 percent slopes—3 percent

#### **Characteristics of the Packer Soil**

*Classification:* Argic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* Convex, windswept crests and upper side slopes of mountains

*Parent material:* Mixed residuum that includes loess and volcanic ash

*Slope:* 8 to 15 percent

*Elevation:* 8,500 to 10,000 feet

*Average annual precipitation:* About 15 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 50 days

*Dominant present vegetation:* Idaho fescue, bluegrass, low sagebrush, black sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 70 percent pebbles

*Depth:* 0 to 10 inches

*Texture:* Extremely gravelly loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 10 to 21 inches

*Texture:* Extremely cobbly clay loam, extremely cobbly loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 21 to 60 inches

*Texture:* Extremely cobbly sandy loam, extremely cobbly loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Neutral

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 3.6 to 5.0 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.10; T value—3; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Hapgood Soil**

*Classification:* Pachic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* Concave, protected, lower side slopes of mountains

*Parent material:* Colluvium that includes loess and volcanic ash

*Slope:* 8 to 15 percent

*Elevation:* 8,500 to 10,000 feet

*Average annual precipitation:* About 16 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 50 days

*Dominant present vegetation:* Idaho fescue, mountain brome, bluegrass, mountain big sagebrush, serviceberry

#### **Typical Profile**

*Rock fragments on surface:* 10 percent pebbles

*Depth:* 0 to 17 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 17 to 40 inches

*Texture:* Very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 40 to 60 inches

*Texture:* Very cobbly loam, very gravelly loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Neutral

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 5.8 to 7.4 inches

*Water-supplying capacity:* 16 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

**Characteristics of the Rock Outcrop**

*Positions on landscape:* Scattered peaks

**Contrasting Inclusions****Inclusion 1**

*Classification:* Argic Lithic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* Crests of mountains near areas of Rock outcrop

*Distinctive present vegetation:* Low sagebrush, black sagebrush, Idaho fescue

**Inclusion 2**

*Classification:* Entic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* Side slopes of mountains in areas where snow accumulates

*Distinctive present vegetation:* Needlegrass, balsamroot

**Inclusion 3**

*Classification:* Pachic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* North-facing side slopes of mountains

*Distinctive present vegetation:* Oceanspray, mountain big sagebrush

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Packer Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Hapgood Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses****Packer Soil**

*Range seeding:* Poor—small stones

*Roadfill:* Fair—large stones

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Moderate—slope, large stones

*Local roads and streets:* Moderate—slope, frost action, large stones

*Pond reservoir areas:* Severe—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage, large stones

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

**Hapgood Soil**

*Range seeding:* Fair—small stones

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Moderate—slope

*Local roads and streets:* Moderate—slope, frost action

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Packer soil—VIIIs, nonirrigated; Hapgood soil—VIs, nonirrigated; Rock outcrop—VIIIIs, nonirrigated

*Range site:* Packer soil—024X016N; Hapgood soil—024X032N; Rock outcrop—none; Inclusion 1—024X016N; Inclusion 2—025X028N; Inclusion 3—024X034N

**3093—Packer-Layview-Hapgood association**

*Positions on landscape:* Mountains

**Composition**

*Major components:*

Packer very gravelly loam, 15 to 50 percent slopes—40 percent

Layview very gravelly sandy loam, 8 to 15 percent slopes—25 percent

Hapgood fine sandy loam, 30 to 50 percent slopes—20 percent

*Contrasting inclusions:*

Cumulic Haplaquolls, fine-loamy, mixed, frigid, 4 to 8 percent slopes—5 percent

Rock outcrop—4 percent

Itca very cobbly loam, 15 to 30 percent slopes—3 percent

Argic Cryoborolls, clayey-skeletal, montmorillonitic, 30 to 50 percent slopes—3 percent

### **Characteristics of the Packer Soil**

*Classification:* Argic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* Convex side slopes of mountains

*Parent material:* Mixed residuum that includes loess and volcanic ash

*Slope:* 15 to 50 percent

*Elevation:* 8,000 to 10,000 feet

*Average annual precipitation:* About 15 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 40 days

*Dominant present vegetation:* Idaho fescue, bluegrass, low sagebrush, black sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 55 percent pebbles

*Depth:* 0 to 10 inches

*Texture:* Very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 10 to 21 inches

*Texture:* Extremely cobbly clay loam, extremely cobbly loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 21 to 60 inches

*Texture:* Extremely cobbly sandy loam, extremely cobbly loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Neutral

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 6 to 8 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.15; T value—3; wind erodibility group—7

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Layview Soil**

*Classification:* Argic Lithic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* Windswept crests of mountains

*Parent material:* Residuum derived from andesite, rhyolite, and tuff

*Slope:* 8 to 15 percent

*Elevation:* 8,000 to 10,000 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 50 days

*Dominant present vegetation:* Idaho fescue, bluegrass, low sagebrush, black sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 50 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Very gravelly sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 3 to 12 inches

*Texture:* Very gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 12 inches

*Material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 14 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.0 to 1.8 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—1; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Hapgood Soil**

*Classification:* Pachic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* Concave side slopes of mountains

*Parent material:* Colluvium that includes loess and volcanic ash

*Slope:* 30 to 50 percent

*Elevation:* 8,000 to 10,000 feet

*Average annual precipitation:* About 16 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 50 days

*Dominant present vegetation:* Idaho fescue, mountain

brome, bluegrass, mountain big sagebrush, serviceberry

### Typical Profile

*Rock fragments on surface:* 10 percent pebbles

*Depth:* 0 to 17 inches

*Texture:* Fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 17 to 40 inches

*Texture:* Very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 40 to 60 inches

*Texture:* Very cobbly loam, very gravelly sandy loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Neutral

### Soil and Water Features

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 6 to 7 inches

*Water-supplying capacity:* 14 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.20; T value—3; wind erodibility group—3

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### Contrasting Inclusions

#### Inclusion 1

*Classification:* Cumulic Haplaquolls, fine-loamy, mixed, frigid

*Positions on landscape:* Near seeps and springs, along canyon bottoms

*Distinctive present vegetation:* Basin wildrye, basin big sagebrush

#### Inclusion 2

*Positions on landscape:* Scattered peaks

*Distinctive present vegetation:* None

#### Inclusion 3

*Classification:* Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* The lower, south- and west-facing side slopes of mountains

*Distinctive present vegetation:* Singleleaf pinyon, mountain big sagebrush

#### Inclusion 4

*Classification:* Argic Cryoborolls, clayey-skeletal, montmorillonitic

*Positions on landscape:* The lower, north-facing side slopes of mountains

*Distinctive present vegetation:* Low sagebrush, bluegrass

### Major Current Uses

Livestock grazing, wildlife habitat

### Suitability for Wildlife Habitat Elements

#### Packer Soil

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### Layview Soil

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### Hapgood Soil

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### Suitability and Limitations for Selected Uses

#### Packer Soil

*Range seeding:* Poor—small stones

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage, large stones

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

#### Layview Soil

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones

*Daily cover for landfill:* Poor—depth to rock, small stones

*Shallow excavations:* Severe—depth to rock

*Local roads and streets:* Severe—depth to rock

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### Hapgood Soil

*Range seeding:* Poor—erodes easily

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope  
*Local roads and streets:* Severe—slope  
*Pond reservoir areas:* Severe—slope  
*Embankments, dikes, and levees:* Moderate—thin layer  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Packer and Layview soils—VIIIs, nonirrigated; Hapgood soil—VIIe, nonirrigated  
*Range site:* Packer and Layview soils—024X016N; Hapgood soil—024X023N; Inclusion 1—028B024N; Inclusion 2—none; Inclusion 3—025X061N; Inclusion 4—024X018N

## **3094—Packer-Hapgood-Torro association**

*Positions on landscape:* Mountains

### **Composition**

*Major components:*

Packer extremely gravelly sandy loam, 30 to 75 percent slopes—40 percent  
 Hapgood gravelly loam, 30 to 50 percent slopes—25 percent  
 Torro very gravelly loam, 5 to 75 percent slopes—20 percent  
*Contrasting inclusions:*  
 Newlands extremely gravelly sandy loam, 30 to 50 percent slopes—7 percent  
 Layview extremely gravelly sandy loam, 30 to 50 percent slopes—3 percent  
 Rock outcrop—3 percent  
 Rubble land—2 percent

### **Characteristics of the Packer Soil**

*Classification:* Argic Cryoborolls, loamy-skeletal, mixed  
*Positions on landscape:* The highest side slopes of mountains  
*Parent material:* Mixed residuum that includes loess and volcanic ash  
*Slope:* 30 to 75 percent  
*Elevation:* 8,700 to 9,400 feet  
*Average annual precipitation:* About 15 inches  
*Average annual air temperature:* About 42 degrees F  
*Frost-free season:* About 50 days  
*Dominant present vegetation:* Idaho fescue, bluegrass, low sagebrush, black sagebrush

### **Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 60 percent pebbles  
*Depth:* 0 to 10 inches

*Texture:* Extremely gravelly sandy loam  
*Structure:* Subangular blocky  
*Consistence:* Soft, very friable  
*Reaction:* Neutral  
*Depth:* 10 to 21 inches  
*Texture:* Extremely cobbly clay loam, extremely cobbly loam  
*Structure:* Angular blocky  
*Consistence:* Hard, friable  
*Reaction:* Neutral  
*Depth:* 21 to 60 inches  
*Texture:* Extremely cobbly sandy loam, extremely cobbly loam  
*Structure:* Massive  
*Consistence:* Soft, very friable  
*Reaction:* Neutral

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 5.0 to 6.5 inches  
*Water-supplying capacity:* 12 inches  
*Runoff:* Rapid  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.10; T value—3; wind erodibility group—8  
*Hazard of erosion:* By water—moderate; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Moderate

### **Characteristics of the Hapgood Soil**

*Classification:* Pachic Cryoborolls, loamy-skeletal, mixed  
*Positions on landscape:* North-facing, concave side slopes of mountains  
*Parent material:* Colluvium that includes loess and volcanic ash  
*Slope:* 30 to 50 percent  
*Elevation:* 8,400 to 9,400 feet  
*Average annual precipitation:* About 16 inches  
*Average annual air temperature:* About 42 degrees F  
*Frost-free season:* About 50 days  
*Dominant present vegetation:* Idaho fescue, mountain brome, bluegrass, mountain big sagebrush, serviceberry

### **Typical Profile**

*Rock fragments on surface:* 10 percent pebbles  
*Depth:* 0 to 17 inches  
*Texture:* Gravelly loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 17 to 40 inches

*Texture:* Very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 40 to 60 inches

*Texture:* Very cobbly loam, very gravelly loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Neutral

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 5.8 to 7.4 inches

*Water-supplying capacity:* 16 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Torro Soil**

*Classification:* Aridic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* The lower, south- and west-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from chert and shale

*Slope:* 50 to 75 percent

*Elevation:* 7,700 to 8,800 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Bluebunch wheatgrass, needlegrass, bluegrass, mountain big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 20 percent cobbles, 45 percent pebbles

*Depth:* 0 to 10 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 10 to 34 inches

*Texture:* Extremely gravelly loam, extremely gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 34 to 60 inches

*Texture:* Extremely gravelly sandy loam, extremely gravelly loamy coarse sand

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 5.5 to 7.0 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.15; T value—5; wind erodibility group—7

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Argic Cryoborolls, fine-loamy, mixed

*Positions on landscape:* The lower, north-facing side slopes of mountains

*Distinctive present vegetation:* Snowberry, serviceberry

##### **Inclusion 2**

*Classification:* Argic Lithic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* Crests of mountains

*Distinctive present vegetation:* Low sagebrush, black sagebrush, bluegrass

##### **Inclusion 3**

*Positions on landscape:* Scattered peaks and severely eroded side slopes of mountains

*Distinctive present vegetation:* None

##### **Inclusion 4**

*Positions on landscape:* Side slopes of mountains

*Distinctive present vegetation:* None

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Packer Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Hapgood Soil***Wild herbaceous plants (nonirrigated):* Fair*Shrubs (nonirrigated):* Fair**Torro Soil***Wild herbaceous plants (nonirrigated):* Fair*Shrubs (nonirrigated):* Fair**Suitability and Limitations for Selected Uses****Packer Soil***Range seeding:* Poor—small stones*Roadfill:* Poor—slope*Topsoil:* Poor—small stones, area reclaim, slope*Daily cover for landfill:* Poor—small stones, slope*Shallow excavations:* Severe—slope*Local roads and streets:* Severe—slope*Pond reservoir areas:* Severe—seepage, slope*Embankments, dikes, and levees:* Severe—seepage, large stones*Sand:* Improbable source—excess fines, large stones*Gravel:* Improbable source—excess fines, large stones**Hapgood Soil***Range seeding:* Poor—erodes easily*Roadfill:* Poor—slope*Topsoil:* Poor—small stones, area reclaim, slope*Daily cover for landfill:* Poor—small stones, slope*Shallow excavations:* Severe—slope*Local roads and streets:* Severe—slope*Pond reservoir areas:* Severe—slope*Embankments, dikes, and levees:* Moderate—large stones*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines**Torro Soil***Range seeding:* Poor—small stones, erodes easily*Roadfill:* Poor—slope*Topsoil:* Poor—small stones, area reclaim, slope*Daily cover for landfill:* Poor—seepage, small stones, slope*Shallow excavations:* Severe—cutbanks cave, slope*Local roads and streets:* Severe—slope*Pond reservoir areas:* Severe—seepage, slope*Embankments, dikes, and levees:* Severe—seepage*Sand:* Probable source*Gravel:* Probable source**Interpretive Groups***Land capability classification:* Packer and Torro soils—VIIIs, nonirrigated; Hapgood soil—VIIe, nonirrigated*Range site:* Packer soil—024X016N; Hapgood soil—024X032N; Torro soil—024X029N; Inclusion 1—028B029N; Inclusion 2—024X016N; Inclusions 3 and 4—none**3101—Hackwood-Newlands-Hapgood association***Positions on landscape:* Mountains**Composition****Major components:**

Hackwood gravelly loam, 15 to 30 percent slopes, rubbly—75 percent

Newlands extremely bouldery loam, 8 to 15 percent slopes—10 percent

Hapgood gravelly loam, 15 to 30 percent slopes—10 percent

**Contrasting inclusions:**

Entic Cryumbrepts, loamy-skeletal, mixed, 8 to 15 percent slopes—2 percent

Packer very gravelly loam, 8 to 15 percent slopes—2 percent

Rock outcrop—1 percent

**Characteristics of the Hackwood Soil***Classification:* Pachic Cryoborolls, fine-loamy, mixed*Positions on landscape:* Concave side slopes of mountains below ridges and areas of Rock outcrop*Parent material:* Colluvium derived from volcanic rock*Slope:* 15 to 30 percent*Elevation:* 7,800 to 9,500 feet*Average annual precipitation:* About 18 inches*Average annual air temperature:* About 41 degrees F*Frost-free season:* About 40 days*Dominant present vegetation:* Quaking aspen**Typical Profile***Rock fragments on surface:* 25 percent stones and boulders*Depth:* 0 to 18 inches*Texture:* Gravelly loam*Structure:* Granular*Consistence:* Slightly hard, very friable*Reaction:* Slightly acid*Depth:* 18 to 32 inches*Texture:* Gravelly loam*Structure:* Subangular blocky*Consistence:* Slightly hard, friable*Reaction:* Slightly acid*Depth:* 32 to 60 inches*Texture:* Very gravelly clay loam*Structure:* Subangular blocky*Consistence:* Slightly hard, friable*Reaction:* Slightly acid**Soil and Water Features***Depth to a seasonal high water table:* More than 60 inches*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 6 to 8 inches

*Water-supplying capacity:* 18 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.10; T value—5;  
wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Newlands Soil**

*Classification:* Argic Cryoborolls, fine-loamy, mixed

*Positions on landscape:* Slightly convex side slopes of mountains

*Parent material:* Colluvium and residuum derived from andesite and rhyolite

*Slope:* 8 to 15 percent

*Elevation:* 7,800 to 9,500 feet

*Average annual precipitation:* About 15 inches

*Average annual air temperature:* About 41 degrees F

*Frost-free season:* About 50 days

*Dominant present vegetation:* Mountain brome, needlegrass, mountain big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 8 percent stones and boulders, 25 percent pebbles

*Depth:* 0 to 10 inches

*Texture:* Extremely bouldery loam

*Structure:* Granular

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 10 to 46 inches

*Texture:* Gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 46 inches

*Kind of material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 40 to 60 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 6 to 8 inches

*Water-supplying capacity:* 14 inches

*Runoff:* Medium

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.15; T value—3;  
wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Hapgood Soil**

*Classification:* Pachic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* Concave side slopes of mountains

*Parent material:* Colluvium that includes loess and volcanic ash

*Slope:* 15 to 30 percent

*Elevation:* 7,800 to 9,500 feet

*Average annual precipitation:* About 16 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 50 days

*Dominant present vegetation:* Idaho fescue, mountain brome, bluegrass, mountain big sagebrush, serviceberry

### **Typical Profile**

*Rock fragments on surface:* 10 percent pebbles

*Depth:* 0 to 17 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 17 to 40 inches

*Texture:* Very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 40 to 60 inches

*Texture:* Very cobbly loam, very gravelly loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Neutral

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 6.0 to 7.4 inches

*Water-supplying capacity:* 16 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.24; T value—5;  
wind erodibility group—6

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate



### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Entic Cryumbrepts, loamy-skeletal, mixed

*Positions on landscape:* Concave areas of basins

*Distinctive present vegetation:* Needlegrass, balsamroot

#### **Inclusion 2**

*Classification:* Argic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* Windswept crests of mountains

*Distinctive present vegetation:* Low sagebrush, Idaho fescue, balsamroot

#### **Inclusion 3**

*Positions on landscape:* Scattered peaks

*Distinctive present vegetation:* None

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Hackwood Soil**

*Wild herbaceous plants (nonirrigated):* Good

*Shrubs (nonirrigated):* Good

#### **Newlands Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Hapgood Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Hackwood Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Fair—shrink-swell, slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Newlands Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Fair—depth to rock, thin layer

*Topsoil:* Poor—small stones, depth to rock

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Moderate—depth to rock, slope

*Local roads and streets:* Moderate—slope, shrink-swell, frost action

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—thin layer, large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Hapgood Soil**

*Range seeding:* Fair—erodes easily, small stones

*Roadfill:* Fair—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Hackwood and Newlands soils—VIIs, nonirrigated; Hapgood soil—VIe, nonirrigated

*Range site:* Hackwood soil—025X065N; Newlands soil—028B029N; Hapgood soil—024X032N;

Inclusion 1—025X028N; Inclusion 2—024X016N;

Inclusion 3—none

### **3111—Ninemile-Zoesta-Itca association**

*Positions on landscape:* Mountains

### **Composition**

*Major components:*

Ninemile extremely cobbly loam, 15 to 30 percent slopes—55 percent

Zoesta cobbly loam, 8 to 15 percent slopes—15 percent

Itca extremely stony loam, 15 to 30 percent slopes—15 percent

*Contrasting inclusions:*

Rock outcrop—10 percent

Aridic Argixerolls, fine-loamy, mixed, frigid, 2 to 8 percent slopes—3 percent

Punchbowl very gravelly loam, 8 to 15 percent slopes—2 percent

### **Characteristics of the Ninemile Soil**

*Classification:* Lithic Argixerolls, clayey, montmorillonitic, frigid

*Positions on landscape:* Convex side slopes of mountains

*Parent material:* Residuum derived from andesite, basalt, and tuff

*Slope:* 15 to 30 percent

*Elevation:* 6,800 to 7,400 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Low sagebrush, bluegrass, needlegrass, Idaho fescue, singleleaf pinyon

#### **Typical Profile**

*Rock fragments on surface:* 10 percent stones and boulders, 40 percent cobbles, 25 percent pebbles

*Depth:* 0 to 9 inches

*Texture:* Extremely cobbly loam

*Structure:* Granular

*Consistence:* Slightly hard, friable

*Reaction:* Neutral

*Depth:* 9 to 19 inches

*Texture:* Clay, gravelly clay

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Neutral

*Depth:* 19 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Very slow

*Available water capacity:* 2 to 3 inches

*Water-supplying capacity:* 10 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.05; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

#### **Characteristics of the Zoesta Soil**

*Classification:* Xerollic Paleargids, fine, montmorillonitic, frigid

*Positions on landscape:* Side slopes of mountains

*Parent material:* Alluvium and colluvium derived from various kinds of rock

*Slope:* 8 to 15 percent

*Elevation:* 6,800 to 7,400 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Bluebunch wheatgrass, needlegrass, low sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 15 percent cobbles, 15 percent pebbles

*Depth:* 0 to 7 inches

*Texture:* Cobbly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 7 to 23 inches

*Texture:* Clay

*Structure:* Prismatic

*Consistence:* Very hard, very firm

*Reaction:* Mildly alkaline

*Depth:* 23 to 31 inches

*Texture:* Gravelly clay, gravelly clay loam

*Structure:* Prismatic

*Consistence:* Very hard, very firm

*Reaction:* Moderately alkaline

*Depth:* 31 to 60 inches

*Texture:* Very gravelly loam, very gravelly clay loam

*Structure:* Massive

*Consistence:* Very hard, very firm

*Reaction:* Moderately alkaline

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Very slow

*Available water capacity:* 8 to 11 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.20; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

#### **Characteristics of the Itca Soil**

*Classification:* Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* Crests and side slopes of mountains near areas of Rock outcrop

*Parent material:* Residuum derived from extrusive volcanic and pyroclastic rock

*Slope:* 15 to 30 percent

*Elevation:* 6,800 to 7,400 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Idaho fescue, bluegrass, singleleaf pinyon, Utah juniper, mountain big sagebrush

*Site index for singleleaf pinyon:* 70

### Typical Profile

*Rock fragments on surface:* 15 percent stones and boulders, 10 percent cobbles, 20 percent pebbles

*Depth:* 0 to 9 inches

*Texture:* Extremely stony loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 9 to 17 inches

*Texture:* Very cobbly clay, very gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 17 inches

*Kind of material:* Unweathered bedrock

### Soil and Water Features

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.5 to 2.5 inches

*Water-supplying capacity:* 10 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### Contrasting Inclusions

#### Inclusion 1

*Positions on landscape:* Scattered peaks, rims, escarpments

*Distinctive present vegetation:* None

#### Inclusion 2

*Classification:* Argic Argixerolls, fine-loamy, mixed, frigid

*Positions on landscape:* Drainageways

*Distinctive present vegetation:* Basin big sagebrush, basin wildrye

#### Inclusion 3

*Classification:* Lithic Xerollic Haplargids, loamy, mixed, frigid

*Positions on landscape:* Low crests and shoulder slopes of mountains

*Distinctive present vegetation:* Black sagebrush, bottlebrush squirreltail

### Major Current Uses

Livestock grazing, wildlife habitat

### Suitability for Wildlife Habitat Elements

#### Ninemile Soil

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### Zoesta Soil

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### Itca Soil

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### Suitability and Limitations for Selected Uses

#### Ninemile Soil

*Range seeding:* Poor—droughty, large stones, rooting depth

*Roadfill:* Poor—depth to rock, low strength

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, too clayey, hard to pack

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, low strength, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### Zoesta Soil

*Range seeding:* Poor—rooting depth

*Roadfill:* Fair—shrink-swell

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Moderate—too clayey, slope

*Local roads and streets:* Severe—low strength, shrink-swell

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Slight

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### Itca Soil

*Range seeding:* Poor—droughty, large stones

*Roadfill:* Poor—depth to rock, large stones, too clayey

*Topsoil:* Poor—depth to rock, small stones, too clayey

*Daily cover for landfill:* Poor—depth to rock, too clayey, small stones

*Shallow excavations:* Severe—depth to rock, large stones, slope

*Local roads and streets:* Severe—depth to rock, large stones, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

### ***Interpretive Groups***

*Land capability classification:* Ninemile and Itca soils—VIIs, nonirrigated; Zoesta soil—IVs, irrigated, and VIIs, nonirrigated

*Range site:* Ninemile soil—028B037N; Zoesta soil—028B045N; Itca soil—025X061N; Inclusion 1—none; Inclusion 2—028B003N; Inclusion 3—028B016N

## **3120—Walti-Softscrabble-Chad association**

*Positions on landscape:* Mountains

### ***Composition***

*Major components:*

Walti very cobbly loam, 30 to 50 percent slopes—40 percent

Softscrabble very cobbly fine sandy loam, 30 to 50 percent slopes—25 percent

Chad cobbly loam, 30 to 50 percent slopes—20 percent

*Contrasting inclusions:*

Cleavage very cobbly loam, 15 to 50 percent slopes—7 percent

Rock outcrop—6 percent

Rubble land—2 percent

### ***Characteristics of the Walti Soil***

*Classification:* Aridic Argixerolls, fine, montmorillonitic, frigid

*Positions on landscape:* Convex side slopes of mountains

*Parent material:* Colluvium and residuum derived from rhyolite, andesite, and tuff

*Slope:* 30 to 50 percent

*Elevation:* 6,400 to 8,200 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, low sagebrush

### ***Typical Profile***

*Rock fragments on surface:* 30 percent cobbles, 20 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 4 to 10 inches

*Texture:* Clay loam, gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 10 to 30 inches

*Texture:* Clay

*Structure:* Prismatic

*Consistence:* Very hard, firm

*Reaction:* Neutral

*Depth:* 30 inches

*Kind of material:* Unweathered bedrock

### ***Soil and Water Features***

*Depth to bedrock:* 20 to 30 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Very slow

*Available water capacity:* 2.0 to 3.5 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—2; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

### ***Characteristics of the Softscrabble Soil***

*Classification:* Pachic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Concave, north-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from volcanic rock

*Slope:* 30 to 50 percent

*Elevation:* 6,400 to 8,200 feet

*Average annual precipitation:* About 16 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 70 days

*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

### ***Typical Profile***

*Rock fragments on surface:* 30 percent cobbles, 25 percent pebbles

*Depth:* 0 to 16 inches

*Texture:* Very cobbly fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 16 to 30 inches

*Texture:* Very cobbly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 30 to 60 inches  
*Texture:* Very gravelly clay loam

*Structure:* Angular blocky  
*Consistence:* Hard, friable  
*Reaction:* Neutral

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 6 to 8 inches  
*Water-supplying capacity:* 15 inches  
*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.15; T value—5; wind erodibility group—8

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Chad Soil**

*Classification:* Aridic Argixerolls, fine, mixed, frigid  
*Positions on landscape:* South-facing side slopes of mountains

*Parent material:* Residuum derived from chert and shale

*Slope:* 30 to 50 percent

*Elevation:* 6,400 to 8,200 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Bluebunch wheatgrass, Thurber needlegrass, mountain big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 20 percent cobbles, 10 percent pebbles

*Depth:* 0 to 11 inches

*Texture:* Cobbly loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 11 to 43 inches

*Texture:* Gravelly clay, clay

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 43 inches

*Texture:* Weathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 40 to 60 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 4.5 to 7.0 inches

*Water-supplying capacity:* 13 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.28; T value—3; wind erodibility group—6

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Lithic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Convex crests and shoulder slopes of mountains

*Distinctive present vegetation:* Low sagebrush, black sagebrush

##### **Inclusion 2**

*Positions on landscape:* Scattered peaks

*Distinctive present vegetation:* None

##### **Inclusion 3**

*Positions on landscape:* Below areas of Rock outcrop

*Distinctive present vegetation:* None

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Walti Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

##### **Softscrabble Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

##### **Chad Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

##### **Walti Soil**

*Range seeding:* Poor—rooting depth, large stones

*Roadfill:* Poor—depth to rock, shrink-swell, low strength

*Topsoil:* Poor—too clayey, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, hard to pack, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—shrink-swell, low strength, slope

*Pond reservoir areas:* Severe—slope  
*Embankments, dikes, and levees:* Severe—hard to pack  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Softscrabble Soil**

*Range seeding:* Poor—large stones  
*Roadfill:* Poor—slope  
*Topsoil:* Poor—small stones, area reclaim, slope  
*Daily cover for landfill:* Poor—small stones, slope  
*Shallow excavations:* Severe—slope  
*Local roads and streets:* Severe—slope  
*Pond reservoir areas:* Severe—slope  
*Embankments, dikes, and levees:* Severe—large stones  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Chad Soil**

*Range seeding:* Poor—erodes easily  
*Roadfill:* Poor—slope, shrink-swell  
*Topsoil:* Poor—small stones, slope  
*Daily cover for landfill:* Poor—too clayey, hard to pack, slope  
*Shallow excavations:* Severe—slope  
*Local roads and streets:* Severe—slope, shrink-swell  
*Pond reservoir areas:* Severe—slope  
*Embankments, dikes, and levees:* Severe—hard to pack  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Walti and Softscrabble soils—VII, nonirrigated; Chad soil—VIIe, nonirrigated  
*Range site:* Walti soil—028B037N; Softscrabble soil—024X021N; Chad soil—024X029N; Inclusion 1—028B038N; Inclusions 2 and 3—none

### **3121—Walti-Softscrabble-Bucan association**

*Positions on landscape:* Mountains

#### **Composition**

*Major components:*  
 Walti extremely cobbly loam, 30 to 50 percent slopes—45 percent  
 Softscrabble very cobbly loam, 30 to 50 percent slopes—20 percent  
 Bucan very cobbly loam, 30 to 50 percent slopes—20 percent  
*Contrasting inclusions:*  
 Cumulic Haplaquolls, fine-loamy, mixed, frigid, 2 to 8 percent slopes—6 percent  
 Rock outcrop—5 percent  
 Pachic Haploxerolls, fine-loamy, mixed, frigid, 4 to 15 percent slopes—3 percent

Cumulic Haplaquolls, fine-loamy, mixed, frigid, 2 to 8 percent slopes—1 percent

#### **Characteristics of the Walti Soil**

*Classification:* Aridic Argixerolls, fine, montmorillonitic, frigid  
*Positions on landscape:* Stable crests and shoulder slopes of mountains  
*Parent material:* Colluvium and residuum derived from rhyolite, andesite, and tuff  
*Slope:* 30 to 50 percent  
*Elevation:* 6,500 to 8,000 feet  
*Average annual precipitation:* About 14 inches  
*Average annual air temperature:* About 44 degrees F  
*Frost-free season:* About 80 days  
*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, low sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 40 percent cobbles and stones, 20 percent pebbles  
*Depth:* 0 to 4 inches  
*Texture:* Extremely cobbly loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Neutral  
*Depth:* 4 to 10 inches  
*Texture:* Clay loam, gravelly clay loam  
*Structure:* Subangular blocky  
*Consistence:* Hard, friable  
*Reaction:* Neutral  
*Depth:* 10 to 30 inches  
*Texture:* Clay  
*Structure:* Prismatic  
*Consistence:* Very hard, firm  
*Reaction:* Neutral  
*Depth:* 30 inches  
*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 20 to 30 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Very slow  
*Available water capacity:* 3.5 to 5.0 inches  
*Water-supplying capacity:* 12 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.10; T value—2; wind erodibility group—8  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* High

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Softscrabble Soil**

*Classification:* Pachic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Concave, north- and east-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from volcanic rock

*Slope:* 30 to 50 percent

*Elevation:* 6,500 to 8,000 feet

*Average annual precipitation:* About 16 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 70 days

*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

### **Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 20 percent pebbles

*Depth:* 0 to 16 inches

*Texture:* Very cobbly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 16 to 30 inches

*Texture:* Very cobbly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 30 to 60 inches

*Texture:* Very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 6 to 8 inches

*Water-supplying capacity:* 15 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.15; T value—5; wind erodibility group—8

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Bucan Soil**

*Classification:* Xerollic Haplargids, fine, montmorillonitic, frigid

*Positions on landscape:* West- and south-facing side slopes of mountains

*Parent material:* Loess cap that is high in content of volcanic ash over residuum and colluvium derived from volcanic rock

*Slope:* 30 to 50 percent

*Elevation:* 6,500 to 8,000 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 90 days

*Dominant present vegetation:* Wyoming big sagebrush, bluebunch wheatgrass, bluegrass

### **Typical Profile**

*Rock fragments on surface:* 15 percent stones and boulders, 20 percent cobbles, 20 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 4 to 18 inches

*Texture:* Clay

*Structure:* Prismatic

*Consistence:* Very hard, firm

*Reaction:* Mildly alkaline

*Depth:* 18 to 52 inches

*Texture:* Cobbly clay, gravelly clay, gravelly clay loam

*Structure:* Massive

*Consistence:* Hard, firm

*Reaction:* Moderately alkaline

*Depth:* 52 inches

*Kind of material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 40 to 60 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 8 to 10 inches

*Water-supplying capacity:* 10 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.15; T value—3; wind erodibility group—8

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### ***Contrasting Inclusions***

#### **Inclusion 1**

*Classification:* Cumulic Haplaquolls, fine-loamy, mixed, frigid

*Positions on landscape:* Canyon bottoms, near seeps

*Distinctive present vegetation:* Willow, sedge, chokecherry

#### **Inclusion 2**

*Positions on landscape:* Rims

*Distinctive present vegetation:* None

#### **Inclusion 3**

*Classification:* Pachic Haploxerolls, fine-loamy, mixed, frigid

*Positions on landscape:* Concave, sheltered side slopes of mountains

*Distinctive present vegetation:* Aspen

#### **Inclusion 4**

*Classification:* Cumulic Haplaquolls, fine-loamy, mixed, frigid

*Positions on landscape:* Seeps, springs

*Distinctive present vegetation:* Tufted hairgrass, Nevada bluegrass

#### **Minor Inclusion**

*Positions on landscape:* Below areas of Rock outcrop

*Distinctive present vegetation:* None

### ***Suitability for Wildlife Habitat Elements***

#### **Walti Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Softscrabble Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Bucan Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### ***Suitability and Limitations for Selected Uses***

#### **Walti Soil**

*Range seeding:* Poor—rooting depth, large stones

*Roadfill:* Poor—depth to rock, shrink-swell, low strength

*Topsoil:* Poor—too clayey, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, hard to pack, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—shrink-swell, low strength, slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—hard to pack

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Softscrabble Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Bucan Soil**

*Range seeding:* Poor—large stones, rooting depth

*Roadfill:* Poor—shrink-swell, low strength, slope

*Topsoil:* Poor—too clayey, area reclaim, small stones

*Daily cover for landfill:* Poor—large stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—shrink-swell, low strength, slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### ***Interpretive Groups***

*Land capability classification:* Walti, Softscrabble, and Bucan soils—VIIIs, nonirrigated

*Range site:* Walti soil—024X027N; Softscrabble soil—024X021N; Bucan soil—024X028N; Inclusion 1—028B024N; Inclusion 2—none; Inclusion 3—025X065N; Inclusion 4—025X005N

### **3122—Walti-Sumine-Softscrabble association**

*Positions on landscape:* Mountains

#### ***Composition***

*Major components:*

Walti gravelly loam, 30 to 50 percent slopes—35 percent

Sumine cobbly loam, 30 to 50 percent slopes—30 percent

Softscrabble cobbly loam, 30 to 50 percent slopes—20 percent

*Contrasting inclusions:*

Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid, 4 to 30 percent slopes—6 percent

Rock outcrop—5 percent

Cumulic Haploxerolls, fine-loamy, mixed, frigid, 4 to 15 percent slopes—2 percent

Rubble land—2 percent



### **Characteristics of the Walti Soil**

*Classification:* Aridic Argixerolls, fine, montmorillonitic, frigid

*Positions on landscape:* Convex, stable side slopes of mountains

*Parent material:* Colluvium and residuum derived from volcanic rock

*Slope:* 30 to 50 percent

*Elevation:* 6,500 to 8,200 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, low sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 20 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 4 to 10 inches

*Texture:* Clay loam, gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 10 to 30 inches

*Texture:* Clay

*Structure:* Prismatic

*Consistence:* Very hard, firm

*Reaction:* Neutral

*Depth:* 30 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 20 to 30 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Very slow

*Available water capacity:* 3.5 to 4.7 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.28; T value—2; wind erodibility group—6

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Sumine Soil**

*Classification:* Aridic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* South-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from quartzite and sandstone

*Slope:* 30 to 50 percent

*Elevation:* 6,500 to 8,200 feet

*Average annual precipitation:* About 12 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 90 days

*Dominant present vegetation:* Bluebunch wheatgrass, mountain big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 20 percent cobbles, 10 percent pebbles

*Depth:* 0 to 10 inches

*Texture:* Cobbly loam

*Structure:* Platy

*Consistence:* Soft, friable

*Reaction:* Neutral

*Depth:* 10 to 30 inches

*Texture:* Very cobbly clay loam, very gravelly clay loam, very gravelly loam

*Structure:* Angular blocky

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 30 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 3.0 to 4.5 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.24; T value—2; wind erodibility group—6

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Softscrabble Soil**

*Classification:* Pachic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Concave, north-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from volcanic rock

*Slope:* 30 to 50 percent

*Elevation:* 6,500 to 8,200 feet

*Average annual precipitation:* About 16 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 70 days

*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

### **Typical Profile**

*Rock fragments on surface:* 20 percent cobbles, 10 percent pebbles

*Depth:* 0 to 16 inches

*Texture:* Cobbly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 16 to 30 inches

*Texture:* Very cobbly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 30 to 60 inches

*Texture:* Very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 6 to 8 inches

*Water-supplying capacity:* 14 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.17; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid

*Positions on landscape:* Windswept crests of mountains

*Distinctive present vegetation:* Black sagebrush, low sagebrush, Idaho fescue

#### **Inclusion 2**

*Positions on landscape:* Rims, cliffs

*Distinctive present vegetation:* None

#### **Inclusion 3**

*Classification:* Cumulic Haploxerolls, fine-loamy, mixed, frigid

*Positions on landscape:* Narrow mountain drainageways

*Distinctive present vegetation:* Basin big sagebrush, basin wildrye

#### **Inclusion 4**

*Positions on landscape:* Side slopes of mountains

*Distinctive present vegetation:* None

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Walti Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Sumine Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Softscrabble Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Walti Soil**

*Range seeding:* Poor—rooting depth, erodes easily

*Roadfill:* Poor—depth to rock, shrink-swell, low strength

*Topsoil:* Poor—too clayey, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, hard to pack, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—shrink-swell, low strength, slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—hard to pack

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Sumine Soil**

*Range seeding:* Poor—erodes easily

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Softscrabble Soil**

*Range seeding:* Fair—large stones, erodes easily

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Walthi soil—VIIe, nonirrigated; Sumine and Softscrabble soils—VIIs, nonirrigated

*Range site:* Walthi soil—024X027N; Sumine soil—024X029N; Softscrabble soil—024X021N; Inclusion 1—024X016N; Inclusion 2—none; Inclusion 3—028B024N; Inclusion 4—none

## **3123—Walthi-Softscrabble-Itca association**

*Positions on landscape:* Mountains

### **Composition**

*Major components:*

Walthi very cobbly loam, 8 to 15 percent slopes—35 percent

Softscrabble very gravelly loam, 15 to 30 percent slopes—30 percent

Itca extremely stony loam, 15 to 30 percent slopes—20 percent

*Contrasting inclusions:*

Cumulic Haploxerolls, fine-loamy, mixed, frigid, 2 to 8 percent slopes—5 percent

Aridic Argixerolls, clayey-skeletal, montmorillonitic, frigid, 15 to 30 percent slopes—5 percent

Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid, 15 to 30 percent slopes—5 percent

### **Characteristics of the Walthi Soil**

*Classification:* Aridic Argixerolls, fine, montmorillonitic, frigid

*Positions on landscape:* Crests and shoulder slopes of mountains

*Parent material:* Colluvium and residuum derived from rhyolite, andesite, and tuff

*Slope:* 8 to 15 percent

*Elevation:* 7,000 to 8,200 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, low sagebrush

### **Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 20 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 4 to 10 inches

*Texture:* Clay loam, gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 10 to 30 inches

*Texture:* Clay

*Structure:* Prismatic

*Consistence:* Very hard, firm

*Reaction:* Neutral

*Depth:* 30 inches

*Kind of material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 20 to 30 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Very slow

*Available water capacity:* 3 to 5 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—2; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Softscrabble Soil**

*Classification:* Pachic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Concave side slopes of mountains

*Parent material:* Colluvium and residuum derived from volcanic rock

*Slope:* 15 to 30 percent

*Elevation:* 7,000 to 8,200 feet

*Average annual precipitation:* About 16 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 70 days

*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

**Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 45 percent pebbles

*Depth:* 0 to 16 inches

*Texture:* Very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 16 to 30 inches

*Texture:* Very cobbly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 30 to 60 inches

*Texture:* Gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 7.2 to 8.7 inches

*Water-supplying capacity:* 14 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.10; T value—5; wind erodibility group—7

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

**Characteristics of the Itca Soil**

*Classification:* Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* Convex side slopes of mountains

*Parent material:* Residuum derived from extrusive volcanic and pyroclastic rock

*Slope:* 15 to 30 percent

*Elevation:* 7,000 to 8,200 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Idaho fescue, bluegrass, singleleaf pinyon, Utah juniper, mountain big sagebrush

*Site index for singleleaf pinyon:* 70

**Typical Profile**

*Rock fragments on surface:* 10 percent stones and boulders, 15 percent cobbles, 30 percent pebbles

*Depth:* 0 to 2 inches

*Texture:* Extremely stony loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 2 to 14 inches

*Texture:* Very cobbly clay, very gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 14 inches

*Kind of material:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.8 to 3 inches

*Water-supplying capacity:* 10 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* 28 Moderate

**Contrasting Inclusions****Inclusion 1**

*Classification:* Cumulic Haploxerolls, fine-loamy, mixed, frigid

*Positions on landscape:* Canyon bottoms, narrow mountain drainageways

*Distinctive present vegetation:* Chokecherry

**Inclusion 2**

*Classification:* Aridic Argixerolls, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* South-facing side slopes of mountains

*Distinctive present vegetation:* Bluebunch wheatgrass, mountain big sagebrush

**Inclusion 3**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid

*Positions on landscape:* Convex, windswept crests of mountains near areas of Rock outcrop

*Distinctive present vegetation:* Low sagebrush, black sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Walti Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Softscrabble Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Itca Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Walti Soil**

*Range seeding:* Poor—rooting depth, large stones

*Roadfill:* Poor—depth to rock, shrink-swell, low strength

*Topsoil:* Poor—too clayey, small stones

*Daily cover for landfill:* Poor—depth to rock, hard to pack

*Shallow excavations:* Severe—depth to rock

*Local roads and streets:* Severe—shrink-swell, low strength

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—hard to pack

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Softscrabble Soil**

*Range seeding:* Poor—small stones

*Roadfill:* Fair—large stones, slope, shrink-swell

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Itca Soil**

*Range seeding:* Poor—droughty, large stones

*Roadfill:* Poor—depth to rock, large stones

*Topsoil:* Poor—depth to rock, small stones, too clayey

*Daily cover for landfill:* Poor—depth to rock, too clayey, small stones

*Shallow excavations:* Severe—depth to rock, large stones, slope

*Local roads and streets:* Severe—depth to rock, large stones, slope

*Pond reservoir areas:* Severe—depth to rock, slope  
*Embankments, dikes, and levees:* Severe—large stones  
*Sand:* Improbable source—excess fines, large stones  
*Gravel:* Improbable source—excess fines, large stones

### **Interpretive Groups**

*Land capability classification:* Walti, Softscrabble, and Itca soils—Vlls, nonirrigated

*Range site:* Walti soil—024X027N; Softscrabble soil—024X021N; Itca soil—025X061N; Inclusion 1—028B025N; Inclusion 2—024X029N; Inclusion 3—024X016N

### **3125—Walti-Softscrabble-Robson association**

*Positions on landscape:* Mountains

### **Composition**

#### *Major components:*

Walti very cobbly loam, 15 to 30 percent slopes—50 percent

Softscrabble very cobbly fine sandy loam, 15 to 30 percent slopes—20 percent

Robson very cobbly loam, 8 to 15 percent slopes—15 percent

#### *Contrasting inclusions:*

Welch loam, drained, 2 to 8 percent slopes—5 percent

Cleavage very cobbly loam, 8 to 30 percent slopes—5 percent

Rock outcrop—3 percent

Rubble land—2 percent

### **Characteristics of the Walti Soil**

*Classification:* Aridic Argixerolls, fine, montmorillonitic, frigid

*Positions on landscape:* The intermediate and upper side slopes of mountains

*Parent material:* Colluvium and residuum derived from rhyolite, andesite, and tuff

*Slope:* 15 to 30 percent

*Elevation:* 6,000 to 7,500 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, low sagebrush

### **Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 20 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 4 to 10 inches

*Texture:* Clay loam, gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 10 to 30 inches

*Texture:* Clay

*Structure:* Prismatic

*Consistence:* Very hard, firm

*Reaction:* Neutral

*Depth:* 30 inches

*Kind of material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 20 to 30 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Very slow

*Available water capacity:* 4.0 to 5.5 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—2; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Softscrabble Soil**

*Classification:* Pachic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* North-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from volcanic rock

*Slope:* 15 to 30 percent

*Elevation:* 6,000 to 7,500 feet

*Average annual precipitation:* About 16 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 70 days

*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

### **Typical Profile**

*Rock fragments on surface:* 25 percent cobbles, 25 percent pebbles

*Depth:* 0 to 16 inches

*Texture:* Very cobbly fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 16 to 30 inches

*Texture:* Very cobbly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 30 to 60 inches

*Texture:* Very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 6.0 to 7.5 inches

*Water-supplying capacity:* 15 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.15; T value—5; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Robson Soil**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* Convex, lower side slopes of mountains

*Parent material:* Residuum derived from siliceous tuff, rhyolite, and andesite

*Slope:* 8 to 15 percent

*Elevation:* 6,000 to 7,300 feet

*Average annual precipitation:* About 12 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 90 days

*Dominant present vegetation:* Low sagebrush, Sandberg bluegrass

### **Typical Profile**

*Rock fragments on surface:* 25 percent cobbles, 20 percent pebbles

*Depth:* 0 to 2 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Salinity:* 0 to 1 millimho per centimeter

*Depth:* 2 to 5 inches

Texture: Very cobbly clay loam  
 Structure: Subangular blocky  
 Consistence: Slightly hard, friable  
 Reaction: Mildly alkaline  
 Salinity: 0 to 1 millimho per centimeter  
 Depth: 5 to 15 inches  
 Texture: Very cobbly clay, extremely cobbly clay  
 Structure: Angular blocky  
 Consistence: Hard, firm  
 Reaction: Mildly alkaline  
 Salinity: 0 to 1 millimho per centimeter

Depth: 15 inches  
 Kind of material: Unweathered bedrock

#### **Soil and Water Features**

Depth to bedrock: 12 to 20 inches  
 Depth to a seasonal high water table: More than 60 inches  
 Frequency of flooding: None  
 Permeability: Slow  
 Available water capacity: 0.6 to 1.8 inches  
 Water-supplying capacity: 10 inches  
 Runoff: Rapid  
 Hydrologic group: D  
 Erosion factors (upper layer): K value—0.20; T value—1; wind erodibility group—8  
 Hazard of erosion: By water—slight; by wind—slight  
 Shrink-swell potential: Moderate  
 Corrosivity: To steel—moderate; to concrete—low  
 Potential for frost action: Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

Classification: Cumulic Haplaquolls, fine-loamy, mixed, frigid  
 Positions on landscape: Narrow mountain drainageways  
 Distinctive present vegetation: Basin big sagebrush, basin wildrye

##### **Inclusion 2**

Classification: Lithic Argixerolls, loamy-skeletal, mixed, frigid  
 Positions on landscape: Crests of mountains  
 Distinctive present vegetation: Low sagebrush, black sagebrush, Idaho fescue

##### **Inclusion 3**

Positions on landscape: Scattered peaks  
 Distinctive present vegetation: None

##### **Inclusion 4**

Positions on landscape: Side slopes of mountains  
 Distinctive present vegetation: None

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Walti Soil**

Wild herbaceous plants (nonirrigated): Fair  
 Shrubs (nonirrigated): Fair

##### **Softscrabble Soil**

Wild herbaceous plants (nonirrigated): Fair  
 Shrubs (nonirrigated): Fair

##### **Robson Soil**

Wild herbaceous plants (nonirrigated): Fair  
 Shrubs (nonirrigated): Fair

#### **Suitability and Limitations for Selected Uses**

##### **Walti Soil**

Range seeding: Poor—rooting depth, large stones  
 Roadfill: Poor—depth to rock, shrink-swell, low strength  
 Topsoil: Poor—too clayey, small stones, slope  
 Daily cover for landfill: Poor—depth to rock, hard to pack, slope  
 Shallow excavations: Severe—depth to rock, slope  
 Local roads and streets: Severe—shrink-swell, low strength, slope  
 Pond reservoir areas: Severe—slope  
 Embankments, dikes, and levees: Severe—hard to pack  
 Sand: Improbable source—excess fines  
 Gravel: Improbable source—excess fines

##### **Softscrabble Soil**

Range seeding: Poor—large stones  
 Roadfill: Fair—large stones, slope  
 Topsoil: Poor—small stones, area reclaim, slope  
 Daily cover for landfill: Poor—small stones, slope  
 Shallow excavations: Severe—slope  
 Local roads and streets: Severe—slope  
 Pond reservoir areas: Severe—slope  
 Embankments, dikes, and levees: Severe—large stones  
 Sand: Improbable source—excess fines  
 Gravel: Improbable source—excess fines

##### **Robson Soil**

Range seeding: Poor—droughty, large stones  
 Roadfill: Poor—depth to rock, large stones  
 Topsoil: Poor—depth to rock, small stones  
 Daily cover for landfill: Poor—depth to rock, large stones  
 Shallow excavations: Severe—depth to rock, large stones  
 Local roads and streets: Severe—depth to rock, large stones  
 Pond reservoir areas: Severe—depth to rock, slope  
 Embankments, dikes, and levees: Severe—large stones  
 Sand: Improbable source—excess fines, large stones  
 Gravel: Improbable source—excess fines, large stones

#### **Interpretive Groups**

Land capability classification: Walti, Softscrabble, and Robson soils—VIIIs, nonirrigated

*Range site:* Walti soil—028B037N; Softscrabble soil—024X021N; Robson soil—028B045N; Inclusion 1—028B024N; Inclusion 2—028B038N; Inclusions 3 and 4—none

### **3130—Itca-Clan Alpine-Reluctan association**

*Positions on landscape:* Mountains

#### **Composition**

*Major components:*

Itca very gravelly loam, 15 to 30 percent slopes—35 percent

Clan Alpine very gravelly loam, 30 to 50 percent slopes—35 percent

Reluctan very cobbly loam, 30 to 50 percent slopes—15 percent

*Contrasting inclusions:*

Xerollic Paleargids, fine, montmorillonitic, frigid, 8 to 30 percent slopes—8 percent

Cumulic Haploxerolls, fine-loamy, mixed, frigid, 2 to 8 percent slopes—3 percent

Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid, 15 to 30 percent slopes—2 percent

Rock outcrop—2 percent

#### **Characteristics of the Itca Soil**

*Classification:* Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* Convex crests of mountains

*Parent material:* Residuum derived from extrusive volcanic and pyroclastic rock

*Slope:* 15 to 30 percent

*Elevation:* 6,400 to 7,300 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Idaho fescue, bluegrass, singleleaf pinyon, Utah juniper, mountain big sagebrush

*Site index for singleleaf pinyon:* 70

#### **Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 40 percent pebbles

*Depth:* 0 to 9 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 9 to 17 inches

*Texture:* Very gravelly clay, very gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 17 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.5 to 2.2 inches

*Water-supplying capacity:* 10 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Clan Alpine Soil**

*Classification:* Typic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Concave side slopes of mountains

*Parent material:* Colluvium and residuum derived from rhyolitic and andesitic tuff

*Slope:* 30 to 50 percent

*Elevation:* 6,400 to 7,300 feet

*Average annual precipitation:* About 15 inches

*Average annual air temperature:* About 41 degrees F

*Frost-free season:* About 70 days

*Dominant present vegetation:* Singleleaf pinyon, mountain big sagebrush, bluebunch wheatgrass, Utah juniper

*Site index for singleleaf pinyon:* 75

#### **Typical Profile**

*Rock fragments on surface:* 5 percent stones and boulders, 40 percent cobbles, 20 percent pebbles

*Depth:* 0 to 10 inches

*Texture:* Very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 10 to 39 inches

*Texture:* Very gravelly clay loam, very cobbly loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Mildly alkaline

*Depth:* 39 inches

*Texture:* Weathered bedrock



### Soil and Water Features

*Depth to bedrock:* 20 to 40 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 5.2 to 6.5 inches  
*Water-supplying capacity:* 14 inches  
*Runoff:* Rapid  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.17; T value—2; wind erodibility group—7  
*Hazard of erosion:* By water—severe; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Moderate

### Characteristics of the Reluctant Soil

*Classification:* Aridic Argixerolls, fine-loamy, mixed, frigid  
*Positions on landscape:* Slightly convex, north-facing side slopes of mountains  
*Parent material:* Colluvium and residuum derived from rhyolitic rock  
*Slope:* 30 to 50 percent  
*Elevation:* 6,400 to 7,300 feet  
*Average annual precipitation:* About 12 inches  
*Average annual air temperature:* About 43 degrees F  
*Frost-free season:* About 80 days  
*Dominant present vegetation:* Bluebunch wheatgrass, needlegrass, Idaho fescue, mountain big sagebrush

### Typical Profile

*Rock fragments on surface:* 30 percent cobbles, 20 percent pebbles

*Depth:* 0 to 9 inches  
*Texture:* Very cobbly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, friable  
*Reaction:* Neutral

*Depth:* 9 to 27 inches  
*Texture:* Gravelly clay loam, gravelly loam  
*Structure:* Subangular blocky  
*Consistence:* Hard, firm  
*Reaction:* Mildly alkaline  
*Depth:* 27 inches  
*Kind of material:* Unweathered bedrock

### Soil and Water Features

*Depth to bedrock:* 20 to 40 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow

*Available water capacity:* 3.6 to 5.0 inches  
*Water-supplying capacity:* 12 inches  
*Runoff:* Medium  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.10; T value—2; wind erodibility group—8  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Moderate

### Contrasting Inclusions

#### Inclusion 1

*Classification:* Xerollic Paleargids, fine, montmorillonitic, frigid  
*Positions on landscape:* Foot slopes of mountains  
*Distinctive present vegetation:* Low sagebrush, Idaho fescue, rabbitbrush

#### Inclusion 2

*Classification:* Cumulic Haploxerolls, fine-loamy, mixed, frigid  
*Positions on landscape:* Canyon bottoms, narrow mountain drainageways  
*Distinctive present vegetation:* Basin big sagebrush, basin wildrye

#### Inclusion 3

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid  
*Positions on landscape:* South-facing, lower crests of mountains  
*Distinctive present vegetation:* Black sagebrush, rabbitbrush

#### Inclusion 4

*Positions on landscape:* Scattered peaks  
*Distinctive present vegetation:* None

### Major Uses

*Current uses:* Livestock grazing, wildlife habitat  
*Potential foreseeable use:* Cordwood production

### Suitability for Wildlife Habitat Elements

#### Itca Soil

*Wild herbaceous plants (nonirrigated):* Fair  
*Coniferous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### Clanalpine Soil

*Wild herbaceous plants (nonirrigated):* Fair  
*Coniferous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### Reluctant Soil

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses****Itca Soil**

*Range seeding:* Poor—droughty, small stones  
*Roadfill:* Poor—depth to rock  
*Topsoil:* Poor—depth to rock, small stones, slope  
*Daily cover for landfill:* Poor—depth to rock, too clayey, small stones  
*Shallow excavations:* Severe—depth to rock, slope  
*Local roads and streets:* Severe—depth to rock, slope  
*Pond reservoir areas:* Severe—depth to rock, slope  
*Embankments, dikes, and levees:* Severe—thin layer  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

**Clan Alpine Soil**

*Range seeding:* Poor—small stones  
*Roadfill:* Poor—depth to rock, slope  
*Topsoil:* Poor—small stones, slope  
*Daily cover for landfill:* Poor—depth to rock, small stones, slope  
*Shallow excavations:* Severe—slope  
*Local roads and streets:* Severe—slope  
*Pond reservoir areas:* Severe—slope  
*Embankments, dikes, and levees:* Moderate—large stones  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

**Reluctant Soil**

*Range seeding:* Poor—large stones  
*Roadfill:* Poor—depth to rock, slope  
*Topsoil:* Poor—small stones, slope  
*Daily cover for landfill:* Poor—depth to rock, small stones, slope  
*Shallow excavations:* Severe—depth to rock, slope  
*Local roads and streets:* Severe—slope  
*Pond reservoir areas:* Severe—slope  
*Embankments, dikes, and levees:* Severe—thin layer  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Itca, Clan Alpine, and Reluctant soils—VIIIs, nonirrigated  
*Range site:* Itca and Clan Alpine soils—025X061N; Reluctant soil—024X021N; Inclusion 1—024X018N; Inclusion 2—028B024N; Inclusion 3—024X031N

**3131—Itca-Ninemile-Rock outcrop association**

*Positions on landscape:* Mountains

**Composition***Major components:*

Itca extremely stony loam, 50 to 75 percent slopes—50 percent  
 Ninemile extremely cobbly loam, 15 to 30 percent slopes—20 percent  
 Rock outcrop—15 percent  
*Contrasting inclusions:*  
 Aridic Argixerolls, fine, montmorillonitic, frigid, 8 to 15 percent slopes—8 percent  
 Aridic Argixerolls, clayey-skeletal, montmorillonitic, frigid, 30 to 50 percent slopes—5 percent  
 Pachic Argixerolls, fine, montmorillonitic, frigid, 2 to 8 percent slopes—2 percent

**Characteristics of the Itca Soil**

*Classification:* Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid  
*Positions on landscape:* Concave, upper side slopes of mountains  
*Parent material:* Residuum derived from extrusive volcanic and pyroclastic rock  
*Slope:* 50 to 75 percent  
*Elevation:* 6,800 to 7,900 feet  
*Average annual precipitation:* About 14 inches  
*Average annual air temperature:* About 43 degrees F  
*Frost-free season:* About 80 days  
*Dominant present vegetation:* Idaho fescue, bluegrass, singleleaf pinyon, Utah juniper, mountain big sagebrush  
*Site index for singleleaf pinyon:* 70

**Typical Profile**

*Rock fragments on surface:* 25 percent stones and boulders, 35 percent cobbles, 20 percent pebbles  
*Depth:* 0 to 9 inches  
*Texture:* Extremely stony loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral  
*Depth:* 9 to 17 inches  
*Texture:* Very cobbly clay, very gravelly clay loam  
*Structure:* Prismatic  
*Consistence:* Hard, firm  
*Reaction:* Mildly alkaline  
*Depth:* 17 inches  
*Kind of material:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 1.8 to 2.7 inches  
*Water-supplying capacity:* 10 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.10; T value—1;  
     wind erodibility group—8  
*Hazard of erosion:* By water—severe; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

### **Characteristics of the Ninemile Soil**

*Classification:* Lithic Argixerolls, clayey, montmorillonitic,  
     frigid  
*Positions on landscape:* The lower side slopes of  
     mountains  
*Parent material:* Residuum derived from andesite,  
     basalt, and tuff  
*Slope:* 15 to 30 percent  
*Elevation:* 6,800 to 7,800 feet  
*Average annual precipitation:* About 14 inches  
*Average annual air temperature:* About 43 degrees F  
*Frost-free season:* About 80 days  
*Dominant present vegetation:* Low sagebrush,  
     bluegrass, needlegrass, Idaho fescue, singleleaf  
     pinyon

### **Typical Profile**

*Rock fragments on surface:* 10 percent stones and  
     boulders, 40 percent cobbles, 25 percent pebbles  
*Depth:* 0 to 2 inches  
*Texture:* Extremely cobbly loam  
*Structure:* Granular  
*Consistence:* Slightly hard, friable  
*Reaction:* Neutral  
*Depth:* 2 to 14 inches  
*Texture:* Clay, gravelly clay  
*Structure:* Prismatic  
*Consistence:* Hard, firm  
*Reaction:* Neutral  
*Depth:* 14 inches  
*Kind of material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches  
*Depth to a seasonal high water table:* More than 60  
     inches  
*Frequency of flooding:* None  
*Permeability:* Very slow  
*Available water capacity:* 1.8 to 2.5 inches  
*Water-supplying capacity:* 10 inches  
*Runoff:* Rapid

*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.05; T value—1;  
     wind erodibility group—8  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* High  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Low

### **Characteristics of the Rock Outcrop**

*Positions on landscape:* Shoulder slopes of mountains  
*Dominant present vegetation:* None

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Aridic Argixerolls, fine, montmorillonitic,  
     frigid  
*Positions on landscape:* Concave crests of mountains  
*Distinctive present vegetation:* Low sagebrush, black  
     sagebrush

#### **Inclusion 2**

*Classification:* Aridic Argixerolls, clayey-skeletal,  
     montmorillonitic, frigid  
*Positions on landscape:* South-facing side slopes of  
     mountains  
*Distinctive present vegetation:* Mountain big sagebrush,  
     bluebunch wheatgrass

#### **Inclusion 3**

*Classification:* Pachic Argixerolls, fine, montmorillonitic,  
     frigid  
*Positions on landscape:* Foot slopes of intermountain  
     drainageways  
*Distinctive present vegetation:* Basin big sagebrush

### **Major Uses**

*Current uses:* Livestock grazing, wildlife habitat  
*Potential foreseeable use:* Wood products

### **Suitability for Wildlife Habitat Elements**

#### **Itca Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Coniferous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### **Ninemile Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Itca Soil**

*Range seeding:* Poor—droughty, large stones  
*Roadfill:* Poor—depth to rock, large stones, too clayey  
*Topsoil:* Poor—depth to rock, small stones, too clayey  
*Daily cover for landfill:* Poor—depth to rock, too clayey,  
     small stones

*Shallow excavations:* Severe—depth to rock, large stones, slope

*Local roads and streets:* Severe—depth to rock, large stones, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

#### **Ninemile Soil**

*Range seeding:* Poor—droughty, large stones

*Roadfill:* Poor—depth to rock, low strength

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, too clayey, hard to pack

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, low strength, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Itca and Ninemile soils—VIIIs, nonirrigated; Rock outcrop—VIIIIs, nonirrigated

*Range site:* Itca soil—025X061N; Ninemile soil—028B037N; Rock outcrop—none; Inclusion 1—024X018N; Inclusion 2—028B027N; Inclusion 3—028B024N

### **3132—Itca-Softscrabble-Cleavage association**

*Positions on landscape:* Mountains

#### **Composition**

*Major components:*

Itca extremely stony loam, 15 to 50 percent slopes—40 percent

Softscrabble cobbly loam, 30 to 50 percent slopes—30 percent

Cleavage very cobbly loam, 8 to 15 percent slopes—15 percent

*Contrasting inclusions:*

Aridic Argixerolls, fine, montmorillonitic, frigid, 30 to 50 percent slopes—5 percent

Lithic Argixerolls, clayey, montmorillonitic, frigid, 8 to 15 percent slopes—5 percent

Rock outcrop—5 percent

#### **Characteristics of the Itca Soil**

*Classification:* Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* Side slopes of mountains near Rock outcrop

*Parent material:* Residuum derived from extrusive volcanic and pyroclastic rock

*Slope:* 15 to 50 percent

*Elevation:* 7,000 to 8,200 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Idaho fescue, bluegrass, singleleaf pinyon, Utah juniper, mountain big sagebrush

*Site index for singleleaf pinyon:* 70

#### **Typical Profile**

*Rock fragments on surface:* 10 percent stones and boulders, 10 percent cobbles, 30 percent pebbles

*Depth:* 0 to 2 inches

*Texture:* Extremely stony loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 2 to 14 inches

*Texture:* Very cobbly clay, very gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 14 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.8 to 2.5 inches

*Water-supplying capacity:* 10 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Softscrabble Soil**

*Classification:* Pachic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Concave side slopes of mountains

*Parent material:* Colluvium and residuum derived from volcanic rock

*Slope:* 30 to 50 percent  
*Elevation:* 7,000 to 8,200 feet  
*Average annual precipitation:* About 16 inches  
*Average annual air temperature:* About 44 degrees F  
*Frost-free season:* About 70 days  
*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

#### **Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 10 percent pebbles

*Depth:* 0 to 16 inches  
*Texture:* Cobbly loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral

*Depth:* 16 to 30 inches  
*Texture:* Very cobbly clay loam  
*Structure:* Angular blocky  
*Consistence:* Hard, friable  
*Reaction:* Neutral

*Depth:* 30 to 60 inches  
*Texture:* Very gravelly clay loam  
*Structure:* Angular blocky  
*Consistence:* Hard, friable  
*Reaction:* Neutral

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 6 to 8 inches  
*Water-supplying capacity:* 14 inches  
*Runoff:* Rapid  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.17; T value—5; wind erodibility group—6  
*Hazard of erosion:* By water—moderate; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Moderate

#### **Characteristics of the Cleavage Soil**

*Classification:* Lithic Argixerolls, loamy-skeletal, mixed, frigid  
*Positions on landscape:* Convex crests of mountains  
*Parent material:* Residuum derived from rhyolite and other igneous rock  
*Slope:* 8 to 15 percent  
*Elevation:* 7,500 to 8,200 feet  
*Average annual precipitation:* About 14 inches  
*Average annual air temperature:* About 44 degrees F  
*Frost-free season:* About 80 days

*Dominant present vegetation:* Low sagebrush, black sagebrush, Idaho fescue, bluegrass

#### **Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 60 percent pebbles

*Depth:* 0 to 4 inches  
*Texture:* Very cobbly loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Neutral

*Depth:* 4 to 18 inches  
*Texture:* Very gravelly clay loam  
*Structure:* Angular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Neutral

*Depth:* 18 inches  
*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 1.8 to 2.5 inches  
*Water-supplying capacity:* 10 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.10; T value—1; wind erodibility group—7  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Aridic Argixerolls, fine, montmorillonitic, frigid  
*Positions on landscape:* The lower side slopes of mountains  
*Distinctive present vegetation:* Utah juniper, singleleaf pinyon, mountain big sagebrush

##### **Inclusion 2**

*Classification:* Lithic Argixerolls, clayey, montmorillonitic, frigid  
*Positions on landscape:* Concave crests of mountains  
*Distinctive present vegetation:* Low sagebrush, Idaho fescue, bluebunch wheatgrass

##### **Inclusion 3**

*Positions on landscape:* Scattered peaks and cliffs  
*Distinctive present vegetation:* None

**Major Uses***Current uses:* Livestock grazing, wildlife habitat*Potential foreseeable use:* Cordwood production**Suitability for Wildlife Habitat Elements****Itca Soil***Wild herbaceous plants (nonirrigated):* Fair*Coniferous plants (nonirrigated):* Fair*Shrubs (nonirrigated):* Fair**Softscrabble Soil***Wild herbaceous plants (nonirrigated):* Fair*Shrubs (nonirrigated):* Fair**Cleavage Soil***Wild herbaceous plants (nonirrigated):* Fair*Shrubs (nonirrigated):* Fair**Suitability and Limitations for Selected Uses****Itca Soil***Range seeding:* Poor—droughty, large stones*Roadfill:* Poor—depth to rock, large stones, too clayey*Topsoil:* Poor—depth to rock, small stones, too clayey*Daily cover for landfill:* Poor—depth to rock, too clayey, small stones*Shallow excavations:* Severe—depth to rock, large stones, slope*Local roads and streets:* Severe—depth to rock, large stones, slope*Pond reservoir areas:* Severe—depth to rock, slope*Embankments, dikes, and levees:* Severe—large stones*Sand:* Improbable source—excess fines, large stones*Gravel:* Improbable source—excess fines, large stones**Softscrabble Soil***Range seeding:* Fair—large stones, erodes easily*Roadfill:* Poor—slope*Topsoil:* Poor—small stones, area reclaim, slope*Daily cover for landfill:* Poor—small stones, slope*Shallow excavations:* Severe—slope*Local roads and streets:* Severe—slope*Pond reservoir areas:* Severe—slope*Embankments, dikes, and levees:* Moderate—large stones*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines**Cleavage Soil***Range seeding:* Poor—droughty, large stones*Roadfill:* Poor—depth to rock*Topsoil:* Poor—depth to rock, small stones*Daily cover for landfill:* Poor—depth to rock, small stones*Shallow excavations:* Severe—depth to rock*Local roads and streets:* Severe—depth to rock*Pond reservoir areas:* Severe—depth to rock, slope*Embankments, dikes, and levees:* Severe—large stones*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines**Interpretive Groups***Land capability classification:* Itca, Softscrabble, and Cleavage soils—VIIIs, nonirrigated*Range site:* Itca soil—025X061N; Softscrabble soil—024X021N; Cleavage soil—024X016N; Inclusion 1—025X062N; Inclusion 2—024X027N; Inclusion 3—none**3134—Itca-Clanalpine-Torro association***Positions on landscape:* Mountains**Composition***Major components:*

Itca extremely cobbly fine sandy loam, 15 to 30 percent slopes—35 percent

Clanalpine extremely cobbly loam, 30 to 50 percent slopes—25 percent

Torro very gravelly loam, 30 to 50 percent slopes—25 percent

*Contrasting inclusions:*

Softscrabble gravelly loam, 15 to 50 percent slopes—5 percent

Rock outcrop—5 percent

Walti very cobbly fine sandy loam, 8 to 30 percent slopes—4 percent

Cumulic Haploxerolls, fine-loamy, mixed, frigid, 2 to 8 percent slopes—1 percent

**Characteristics of the Itca Soil***Classification:* Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid*Positions on landscape:* Convex crests, spurs, and side slopes of mountains adjacent to areas of Rock outcrop*Parent material:* Residuum derived from extrusive volcanic and pyroclastic rock*Slope:* 15 to 30 percent*Elevation:* 7,000 to 8,200 feet*Average annual precipitation:* About 14 inches*Average annual air temperature:* About 43 degrees F*Frost-free season:* About 80 days*Dominant present vegetation:* Idaho fescue, bluegrass, singleleaf pinyon, Utah juniper, mountain big sagebrush*Site index for singleleaf pinyon:* 65**Typical Profile***Rock fragments on surface:* 45 percent cobbles, 30 percent pebbles*Depth:* 0 to 9 inches*Texture:* Extremely cobbly fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 9 to 17 inches

*Texture:* Very gravelly clay, very gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 17 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.2 to 1.6 inches

*Water-supplying capacity:* 10 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.05; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Clanalpine Soil**

*Classification:* Typic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* North- and east-facing, convex side slopes of mountains

*Parent material:* Colluvium and residuum derived from rhyolitic and andesitic tuff

*Slope:* 30 to 50 percent

*Elevation:* 7,000 to 8,200 feet

*Average annual precipitation:* About 15 inches

*Average annual air temperature:* About 41 degrees F

*Frost-free season:* About 70 days

*Dominant present vegetation:* Singleleaf pinyon, mountain big sagebrush, bluebunch wheatgrass, Utah juniper

*Site index for singleleaf pinyon:* 75

#### **Typical Profile**

*Rock fragments on surface:* 5 percent stones and boulders, 40 percent cobbles, 20 percent pebbles

*Depth:* 0 to 12 inches

*Texture:* Extremely cobbly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 12 to 38 inches

*Texture:* Very gravelly clay loam, very cobbly loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Mildly alkaline

*Depth:* 38 inches

*Texture:* Weathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 4 to 5 inches

*Water-supplying capacity:* 13 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.10; T value—2; wind erodibility group—8

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Torro Soil**

*Classification:* Aridic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* South- and west-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from chert and shale

*Slope:* 30 to 50 percent

*Elevation:* 7,000 to 8,200 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Bluebunch wheatgrass, needlegrass, bluegrass, mountain big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 55 percent pebbles

*Depth:* 0 to 10 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 10 to 38 inches

*Texture:* Extremely gravelly loam, extremely gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 38 to 60 inches

*Texture:* Extremely gravelly sandy loam, extremely gravelly loamy coarse sand

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 4.5 to 5.8 inches

*Water-supplying capacity:* 11 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.15; T value—5; wind erodibility group—7

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Pachic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Concave side slopes of mountains in areas where snow accumulates

*Distinctive present vegetation:* Snowberry, mountain big sagebrush, bluegrass

##### **Inclusion 2**

*Positions on landscape:* Scattered peaks

*Distinctive present vegetation:* None

##### **Inclusion 3**

*Classification:* Aridic Argixerolls, fine, montmorillonitic, frigid

*Positions on landscape:* Stable, convex side slopes of mountains

*Distinctive present vegetation:* Low sagebrush, bluegrass

##### **Inclusion 4**

*Classification:* Cumulic Haplaquolls, fine-loamy, mixed, frigid

*Positions on landscape:* Canyon bottoms, drainageways

*Distinctive present vegetation:* Basin wildrye, basin big sagebrush

#### **Minor Inclusions**

*Positions on landscape:* Side slopes of mountains

*Distinctive present vegetation:* None

#### **Major Uses**

*Current uses:* Livestock grazing, wildlife habitat

*Potential foreseeable use:* Cordwood production

#### **Suitability for Wildlife Habitat Elements**

##### **Itca Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

##### **Clan Alpine Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

##### **Torro Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

##### **Itca Soil**

*Range seeding:* Poor—droughty, large stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, too clayey, small stones

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

##### **Clan Alpine Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

##### **Torro Soil**

*Range seeding:* Poor—small stones

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—seepage, small stones, slope

*Shallow excavations:* Severe—cutbanks cave, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source



### **Interpretive Groups**

*Land capability classification:* Itca, Clanalpine, and Torro soils—VIIIs, nonirrigated

*Range site:* Itca and Clanalpine soils—025X061N; Torro soil—024X029N; Inclusion 1—024X021N; Inclusion 2—none; Inclusion 3—024X027N; Inclusion 4—028B025N

### **3135—Itca-Clanalpine-Rock outcrop association**

*Positions on landscape:* Mountains

#### **Composition**

*Major components:*

Itca stony loam, 30 to 50 percent slopes—35 percent

Clanalpine very gravelly loam, 50 to 75 percent slopes—35 percent

Rock outcrop—15 percent

*Contrasting inclusions:*

Cleavage cobbly loam, 15 to 30 percent slopes—7 percent

Jung very gravelly loam, 15 to 30 percent slopes—5 percent

Aridic Argixerolls, loamy-skeletal, mixed, frigid, 15 to 30 percent slopes—3 percent

#### **Characteristics of the Itca Soil**

*Classification:* Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* Crests, shoulder slopes, and convex side slopes of mountains

*Parent material:* Residuum derived from extrusive volcanic and pyroclastic rock

*Slope:* 30 to 50 percent

*Elevation:* 6,500 to 8,000 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Idaho fescue, bluegrass, singleleaf pinyon, Utah juniper, mountain big sagebrush

*Site index for singleleaf pinyon:* 70

#### **Typical Profile**

*Rock fragments on surface:* 0.1 percent stones and boulders, 10 percent cobbles, 30 percent pebbles

*Depth:* 0 to 2 inches

*Texture:* Stony loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 2 to 14 inches

*Texture:* Very cobbly clay, very gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 14 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 2.0 to 2.3 inches

*Water-supplying capacity:* 10 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—1; wind erodibility group—7

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Clanalpine Soil**

*Classification:* Typic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Concave side slopes of mountains

*Parent material:* Colluvium and residuum derived from rhyolitic and andesitic tuff

*Slope:* 50 to 75 percent

*Elevation:* 6,500 to 8,000 feet

*Average annual precipitation:* About 15 inches

*Average annual air temperature:* About 41 degrees F

*Frost-free season:* About 70 days

*Dominant present vegetation:* Singleleaf pinyon, mountain big sagebrush, bluebunch wheatgrass, Utah juniper

#### **Typical Profile**

*Rock fragments on surface:* 5 percent stones and boulders, 10 percent cobbles, 40 percent pebbles

*Depth:* 0 to 10 inches

*Texture:* Very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 10 to 39 inches

*Texture:* Very gravelly clay loam, very cobbly loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Mildly alkaline

*Depth:* 39 inches

*Kind of material:* Weathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 4.3 to 5.7 inches

*Water-supplying capacity:* 14 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.17; T value—2; wind erodibility group—7

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Rock Outcrop**

*Positions on landscape:* Scattered peaks and cliffs

*Dominant present vegetation:* None

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Lithic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Crests of mountains

*Distinctive present vegetation:* Low sagebrush, black sagebrush, bluegrass

#### **Inclusion 2**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic

*Positions on landscape:* The lowest convex side slopes of mountains

*Distinctive present vegetation:* Black sagebrush, rabbitbrush, bottlebrush squirreltail

#### **Inclusion 3**

*Classification:* Aridic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* North-facing side slopes of mountains in areas where snow accumulates

*Distinctive present vegetation:* Mountain big sagebrush, bluegrass

### **Major Uses**

*Current uses:* Livestock grazing, wildlife habitat

*Potential foreseeable use:* Cordwood production

### **Suitability for Wildlife Habitat Elements**

#### **Itca Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Clanalpine Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Itca Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—depth to rock, large stones, slope

*Topsoil:* Poor—depth to rock, small stones, too clayey

*Daily cover for landfill:* Poor—depth to rock, too clayey, small stones

*Shallow excavations:* Severe—depth to rock, large stones, slope

*Local roads and streets:* Severe—depth to rock, large stones, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

#### **Clanalpine Soil**

*Range seeding:* Poor—small stones, erodes easily

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Itca soil—VIIe, nonirrigated; Clanalpine soil—VIIs, nonirrigated; Rock outcrop—VIIIs, nonirrigated

*Range site:* Itca and Clanalpine soils—025X061N; Rock outcrop—none; Inclusion 1—024X016N; Inclusion 2—028B016N; Inclusion 3—027X054N

### **3136—Itca-Roca-Reluctan association**

*Positions on landscape:* Mountains

### **Composition**

*Major components:*

Itca very cobbly loam, 15 to 50 percent slopes—45 percent

Roca very cobbly loam, 30 to 50 percent slopes—25 percent

Reluctan cobbly loam, 15 to 30 percent slopes—15 percent

*Contrasting inclusions:*

Durixerollic Camborthids, coarse-loamy, mixed, frigid, 2 to 8 percent slopes—8 percent

Lithic Xerollic Haplargids, loamy-skeletal, montmorillonitic, mesic, 4 to 15 percent slopes—5 percent

Rock outcrop—2 percent

**Characteristics of the Itca Soil**

*Classification:* Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* Convex, north-facing side slopes of mountains

*Parent material:* Residuum derived from extrusive volcanic and pyroclastic rock

*Slope:* 15 to 50 percent

*Elevation:* 6,100 to 6,500 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Idaho fescue, bluegrass, singleleaf pinyon, Utah juniper, mountain big sagebrush

*Site index for singleleaf pinyon:* 70

**Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 20 percent pebbles

*Depth:* 0 to 2 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 2 to 14 inches

*Texture:* Very cobbly clay, very gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 14 inches

*Kind of material:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.8 to 2.3 inches

*Water-supplying capacity:* 10 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

**Characteristics of the Roca Soil**

*Classification:* Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* South-facing side slopes of mountains

*Parent material:* Residuum derived from shale and chert

*Slope:* 30 to 50 percent

*Elevation:* 6,100 to 6,500 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Bluegrass, bluebunch wheatgrass, big sagebrush

**Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 20 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Very cobbly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 4 to 24 inches

*Texture:* Very gravelly clay loam, very gravelly clay

*Structure:* Angular blocky

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 24 inches

*Kind of material:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Very slow

*Available water capacity:* 2.6 to 3.4 inches

*Water-supplying capacity:* 11 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—2; wind erodibility group—8

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Reluctan Soil**

*Classification:* Aridic Argixerolls, fine-loamy, mixed, frigid

*Positions on landscape:* Concave, north-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from rhyolitic rock

*Slope:* 15 to 30 percent

*Elevation:* 6,100 to 6,500 feet

*Average annual precipitation:* About 12 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Bluebunch wheatgrass, needlegrass, Idaho fescue, mountain big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 15 percent cobbles, 15 percent pebbles

*Depth:* 0 to 9 inches

*Texture:* Cobbly loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Neutral

*Depth:* 9 to 27 inches

*Texture:* Gravelly clay loam, gravelly loam

*Structure:* Subangular blocky

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 27 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 3.2 to 4.3 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Medium

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.28; T value—2; wind erodibility group—6

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, frigid

*Positions on landscape:* Intermountain drainageways

*Distinctive present vegetation:* Basin wildrye, basin big sagebrush

#### **Inclusion 2**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, montmorillonitic, mesic

*Positions on landscape:* The lowest areas on crests of mountains

*Distinctive present vegetation:* Wyoming big sagebrush, bluegrass

#### **Inclusion 3**

*Positions on landscape:* Scattered peaks

*Distinctive present vegetation:* None

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Itca Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Roca Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Reluctan Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Itca Soil**

*Range seeding:* Poor—droughty, large stones

*Roadfill:* Poor—depth to rock, large stones, slope

*Topsoil:* Poor—depth to rock, small stones, too clayey

*Daily cover for landfill:* Poor—depth to rock, too clayey, small stones

*Shallow excavations:* Severe—depth to rock, large stones, slope

*Local roads and streets:* Severe—depth to rock, large stones, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

#### **Roca Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Reluctan Soil**

*Range seeding:* Fair—large stones, erodes easily

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Itca, Roca, and Reluctan soils—Vlls, nonirrigated

*Range site:* Itca soil—025X061N; Roca soil—024X028N; Reluctan soil—024X021N; Inclusion 1—025X003N; Inclusion 2—028B010N; Inclusion 3—none

**3137—Itca-Reluctan-Walti association**

*Positions on landscape:* Mountains

**Composition**

*Major components:*

Itca stony loam, 15 to 30 percent slopes—40 percent

Reluctan very cobbly loam, 15 to 30 percent slopes—30 percent

Walti cobbly loam, 8 to 15 percent slopes—15 percent

*Contrasting inclusions:*

Xerollic Haplargids, loamy-skeletal, mixed, frigid, 15 to 50 percent slopes—8 percent

Rock outcrop—3 percent

Lithic Argixerolls, loamy-skeletal, mixed, frigid, 2 to 8 percent slopes—2 percent

Aridic Haploxerolls, fine-loamy, mixed, frigid, 8 to 15 percent slopes—2 percent

**Characteristics of the Itca Soil**

*Classification:* Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* Convex side slopes of mountains

*Parent material:* Residuum derived from extrusive volcanic and pyroclastic rock

*Slope:* 15 to 30 percent

*Elevation:* 6,400 to 7,500 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Idaho fescue, bluegrass, singleleaf pinyon, Utah juniper, mountain big sagebrush

*Site index for singleleaf pinyon:* 70

**Typical Profile**

*Rock fragments on surface:* 0.1 percent stones and boulders, 10 percent cobbles, 20 percent pebbles

*Depth:* 0 to 2 inches

*Texture:* Stony loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 2 to 14 inches

*Texture:* Very cobbly clay, very gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 14 inches

*Kind of material:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 2 to 3 inches

*Water-supplying capacity:* 10 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—1; wind erodibility group—7

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

**Characteristics of the Reluctan Soil**

*Classification:* Aridic Argixerolls, fine-loamy, mixed, frigid

*Positions on landscape:* Concave, north-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from rhyolitic rock

*Slope:* 15 to 30 percent

*Elevation:* 6,400 to 7,500 feet

*Average annual precipitation:* About 12 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Bluebunch wheatgrass, needlegrass, Idaho fescue, mountain big sagebrush

**Typical Profile**

*Rock fragments on surface:* 25 percent cobbles, 15 percent pebbles

*Depth:* 0 to 9 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Neutral

*Depth:* 9 to 27 inches

*Texture:* Gravelly clay loam, gravelly loam

*Structure:* Subangular blocky

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 27 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 3 to 5 inches

*Water-supplying capacity:* 14 inches

*Runoff:* Medium

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.10; T value—2; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Walti Soil**

*Classification:* Aridic Argixerolls, fine, montmorillonitic, frigid

*Positions on landscape:* Convex crests and shoulder slopes of mountains

*Parent material:* Colluvium and residuum derived from rhyolite, andesite, and tuff

*Slope:* 8 to 15 percent

*Elevation:* 6,400 to 7,500 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, low sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 20 percent cobbles, 15 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Cobbly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 4 to 10 inches

*Texture:* Clay loam, gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 10 to 30 inches

*Texture:* Clay

*Structure:* Prismatic

*Consistence:* Very hard, firm

*Reaction:* Neutral

*Depth:* 30 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 20 to 30 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Very slow

*Available water capacity:* 3.7 to 4.7 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—2; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Xerollic Haplargids, loamy-skeletal, mixed, frigid

*Positions on landscape:* Convex, south-facing side slopes of mountains

*Distinctive present vegetation:* Bluebunch wheatgrass, mountain big sagebrush

##### **Inclusion 2**

*Positions on landscape:* Scattered peaks

*Distinctive present vegetation:* None

##### **Inclusion 3**

*Classification:* Lithic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Summits of mountains

*Distinctive present vegetation:* Black sagebrush, low sagebrush

##### **Inclusion 4**

*Classification:* Aridic Haploxerolls, fine-loamy, mixed, frigid

*Positions on landscape:* Intermountain drainageways

*Distinctive present vegetation:* Basin big sagebrush, basin wildrye

#### **Major Uses**

*Current uses:* Livestock grazing, wildlife habitat

*Potential foreseeable use:* Cordwood

### **Suitability for Wildlife Habitat Elements**

#### **Itca Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Reluctan Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Walti Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Itca Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—depth to rock, large stones

*Topsoil:* Poor—depth to rock, small stones, too clayey

*Daily cover for landfill:* Poor—depth to rock, too clayey, small stones

*Shallow excavations:* Severe—depth to rock, large stones, slope

*Local roads and streets:* Severe—depth to rock, large stones, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

#### **Reluctan Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Walti Soil**

*Range seeding:* Poor—rooting depth

*Roadfill:* Poor—depth to rock, shrink-swell, low strength

*Topsoil:* Poor—too clayey, small stones

*Daily cover for landfill:* Poor—depth to rock, hard to pack

*Shallow excavations:* Severe—depth to rock

*Local roads and streets:* Severe—shrink-swell, low strength

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—hard to pack

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Itca soil—VIIe, nonirrigated; Reluctan and Walti soils—VIIs, nonirrigated

*Range site:* Itca soil—025X061N; Reluctan soil—024X021N; Walti soil—024X027N; Inclusion 1—024X029N; Inclusion 2—none; Inclusion 3—024X016N; Inclusion 4—025X003N

### **3140—Sodhouse-Tenabo-Desatoya Variant association**

*Positions on landscape:* Fan piedmonts

### **Composition**

*Major components:*

Sodhouse very fine sandy loam, 2 to 4 percent slopes—35 percent

Tenabo very fine sandy loam, 2 to 4 percent slopes—30 percent

Desatoya Variant gravelly fine sandy loam, 4 to 8 percent slopes—20 percent

*Contrasting inclusions:*

Durixerollic Camborthids, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—5 percent

Duric Camborthids, loamy-skeletal, mixed, mesic, 15 to 50 percent slopes—5 percent

Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow, 15 to 50 percent slopes—5 percent

### **Characteristics of the Sodhouse Soil**

*Classification:* Typic Durorthids, loamy, mixed, mesic, shallow

*Positions on landscape:* Slightly convex areas on summits of fan piedmont remnants

*Parent material:* Mixed alluvium that includes loess and volcanic ash

*Slope:* 2 to 4 percent

*Elevation:* 5,200 to 5,700 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bottlebrush squirreltail, shadscale, bud sagebrush

### **Typical Profile**

*Rock fragments on surface:* 20 percent pebbles

*Depth:* 0 to 7 inches

*Texture:* Very fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 7 to 14 inches  
*Texture:* Very fine sandy loam, loam, silt loam  
*Structure:* Massive  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 14 to 42 inches  
*Kind of material:* Indurated hardpan

*Depth:* 42 to 60 inches  
*Texture:* Gravelly sandy loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 8 millimhos per centimeter  
*Sodicity (SAR):* 0 to 13

#### **Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 2.1 to 3.5 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Slow  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.55; T value—1; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Characteristics of the Tenabo Soil**

*Classification:* Typic Nadurargids, loamy, mixed, mesic, shallow  
*Positions on landscape:* Slightly concave areas on summits of fan piedmont remnants  
*Parent material:* Thin loess mantle that is high in content of volcanic ash over mixed alluvium  
*Slope:* 2 to 4 percent  
*Elevation:* 5,200 to 5,700 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass

#### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles  
*Depth:* 0 to 4 inches  
*Texture:* Very fine sandy loam  
*Structure:* Platy

*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 2 to 10  
*Depth:* 4 to 15 inches  
*Texture:* Clay loam, gravelly clay loam, silty clay loam  
*Structure:* Prismatic  
*Consistence:* Hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 20 to 40

*Depth:* 15 to 28 inches  
*Kind of material:* Indurated hardpan  
*Structure:* Platy  
*Consistence:* Extremely hard, extremely firm

*Depth:* 28 to 60 inches  
*Kind of material:* Stratified very gravelly sandy loam to extremely gravelly coarse sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 20 to 40

#### **Soil and Water Features**

*Depth to the hardpan:* 9 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 2.8 to 4.0 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.55; T value—1; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—moderate  
*Potential for frost action:* Low

#### **Characteristics of the Desatoya Variant Soil**

*Classification:* Xerollic Haplargids, fine-loamy, mixed, mesic  
*Positions on landscape:* Side slopes of fan piedmont remnants  
*Parent material:* Mixed alluvium  
*Slope:* 4 to 8 percent  
*Elevation:* 5,200 to 5,700 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bottlebrush squirreltail, bluegrass, Indian ricegrass, black sagebrush



**Typical Profile**

*Rock fragments on surface:* 5 percent cobbles, 45 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 3 to 13 inches

*Texture:* Gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 13 to 26 inches

*Texture:* Very gravelly sandy loam

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 26 to 60 inches

*Texture:* Very gravelly sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate over rapid

*Available water capacity:* 2.7 to 4.2 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.17; T value—5; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

**Contrasting Inclusions****Inclusion 1**

*Classification:* Durixerollic Camborthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Wyoming big sagebrush, bottlebrush squirreltail

**Inclusion 2**

*Classification:* Duric Camborthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Scarps of fan piedmont remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush

**Inclusion 3**

*Classification:* Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow

*Positions on landscape:* Remnants of rolling hills adjacent to fan piedmonts

*Distinctive present vegetation:* Black sagebrush, shadscale, bottlebrush squirreltail

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Sodhouse Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

**Tenabo Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

**Desatoya Variant Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses****Sodhouse Soil**

*Range seeding:* Poor—too arid, droughty

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—cemented pan

*Daily cover for landfill:* Poor—cemented pan

*Shallow excavations:* Severe—cemented pan

*Local roads and streets:* Severe—cemented pan

*Pond reservoir areas:* Severe—seepage, cemented pan

*Embankments, dikes, and levees:* Moderate—seepage, piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Tenabo Soil**

*Range seeding:* Poor—too arid, droughty, excess sodium

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—cemented pan, small stones, too sandy

*Daily cover for landfill:* Poor—cemented pan, seepage, too sandy

*Shallow excavations:* Severe—cemented pan, cutbanks cave

*Local roads and streets:* Severe—cemented pan  
*Pond reservoir areas:* Severe—seepage, cemented pan  
*Embankments, dikes, and levees:* Severe—seepage, excess sodium, excess salt

*Sand:* Probable source

*Gravel:* Probable source

#### **Desatoya Variant Soil**

*Range seeding:* Fair—too arid, droughty

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

#### **Interpretive Groups**

*Land capability classification:* Sodhouse, Tenabo, and Desatoya Variant soils—IVe, irrigated, and VIIs, nonirrigated

*Range site:* Sodhouse and Tenabo soils—024X002N; Desatoya Variant soil—024X030N; Inclusion 1—028B010N; Inclusion 2—024X002N; Inclusion 3—024X030N

### **3151—Robson-Ninemile-Ravenswood association**

*Positions on landscape:* Mountains

#### **Composition**

*Major components:*

Robson very cobbly loam, 15 to 30 percent slopes—35 percent

Ninemile extremely cobbly loam, 15 to 30 percent slopes—25 percent

Ravenswood gravelly loam, 30 to 50 percent slopes, extremely stony—25 percent

*Contrasting inclusions:*

Rock outcrop—8 percent

Pachic Argixerolls, fine, montmorillonitic, frigid, 8 to 15 percent slopes—3 percent

Pachic Argixerolls, fine, montmorillonitic, frigid, 2 to 8 percent slopes—2 percent

Rubble land—2 percent

#### **Characteristics of the Robson Soil**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* Convex, south-facing side slopes of mountains

*Parent material:* Residuum derived from siliceous tuff, rhyolite, and andesite

*Slope:* 15 to 30 percent

*Elevation:* 6,800 to 7,400 feet

*Average annual precipitation:* About 12 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 90 days

*Dominant present vegetation:* Low sagebrush, Sandberg bluegrass

#### **Typical Profile**

*Rock fragments on surface:* 25 percent cobbles, 20 percent pebbles

*Depth:* 0 to 2 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 2 to 5 inches

*Texture:* Very cobbly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Depth:* 5 to 15 inches

*Texture:* Very cobbly clay, extremely cobbly clay

*Structure:* Angular blocky

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 15 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 12 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 0.6 to 1.2 inches

*Water-supplying capacity:* 10 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.20; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

#### **Characteristics of the Ninemile Soil**

*Classification:* Lithic Argixerolls, clayey, montmorillonitic, frigid

*Positions on landscape:* Convex, north-facing side slopes of mountains

*Parent material:* Residuum derived from andesite, basalt, and tuff  
*Slope:* 15 to 30 percent  
*Elevation:* 6,800 to 7,400 feet  
*Average annual precipitation:* About 14 inches  
*Average annual air temperature:* About 43 degrees F  
*Frost-free season:* About 80 days  
*Dominant present vegetation:* Low sagebrush, bluegrass, needlegrass, Idaho fescue, singleleaf pinyon

#### **Typical Profile**

*Rock fragments on surface:* 10 percent stones and boulders, 40 percent cobbles, 25 percent pebbles

*Depth:* 0 to 7 inches  
*Texture:* Extremely cobbly loam  
*Structure:* Granular  
*Consistence:* Slightly hard, friable  
*Reaction:* Neutral

*Depth:* 7 to 19 inches  
*Texture:* Clay, gravelly clay  
*Structure:* Prismatic  
*Consistence:* Hard, firm  
*Reaction:* Neutral

*Depth:* 19 inches  
*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Very slow  
*Available water capacity:* 2.2 to 2.7 inches  
*Water-supplying capacity:* 10 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.05; T value—1; wind erodibility group—8  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* High  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Low

#### **Characteristics of the Ravenswood Soil**

*Classification:* Typic Argixerolls, clayey-skeletal, montmorillonitic, frigid  
*Positions on landscape:* Slightly concave, north- and east-facing side slopes of mountains  
*Parent material:* Colluvium and residuum derived from metavolcanic and volcanic rock  
*Slope:* 30 to 50 percent  
*Elevation:* 6,800 to 7,400 feet  
*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 42 degrees F  
*Frost-free season:* About 80 days  
*Dominant present vegetation:* Idaho fescue, bluegrass, mountain big sagebrush, singleleaf pinyon  
*Site index for singleleaf pinyon:* 55

#### **Typical Profile**

*Rock fragments on surface:* 3 percent stones and boulders, 10 percent cobbles, 65 percent pebbles

*Depth:* 0 to 9 inches  
*Texture:* Gravelly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral

*Depth:* 9 to 13 inches  
*Texture:* Very gravelly clay loam  
*Structure:* Angular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Mildly alkaline

*Depth:* 13 to 36 inches  
*Texture:* Very gravelly clay  
*Structure:* Angular blocky  
*Consistence:* Hard, firm  
*Reaction:* Mildly alkaline

*Depth:* 36 inches  
*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 30 to 40 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 5 to 6 inches  
*Water-supplying capacity:* 14 inches  
*Runoff:* Rapid  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.20; T value—2; wind erodibility group—6  
*Hazard of erosion:* By water—severe; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Positions on landscape:* Rims, cliffs  
*Distinctive present vegetation:* None

##### **Inclusion 2**

*Classification:* Pachic Argixerolls, fine, montmorillonitic, frigid  
*Positions on landscape:* Concave, lower side slopes of mountains

*Distinctive present vegetation:* Snowberry, mountain big sagebrush, bluebunch wheatgrass

#### **Inclusion 3**

*Classification:* Pachic Argixerolls, fine, montmorillonitic, frigid

*Positions on landscape:* Mountain drainageways

*Distinctive present vegetation:* Basin big sagebrush, basin wildrye

#### **Inclusion 4**

*Positions on landscape:* Side slopes of mountains below areas of Rock outcrop

*Distinctive present vegetation:* None

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Robson Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Ninemile Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Ravenswood Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Robson Soil**

*Range seeding:* Poor—droughty, large stones

*Roadfill:* Poor—depth to rock, large stones

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, large stones, slope

*Shallow excavations:* Severe—depth to rock, large stones, slope

*Local roads and streets:* Severe—depth to rock, large stones, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

#### **Ninemile Soil**

*Range seeding:* Poor—droughty, large stones

*Roadfill:* Poor—depth to rock, low strength

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, too clayey, hard to pack

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, low strength, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Ravenswood Soil**

*Range seeding:* Poor—erodes easily

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, too clayey, small stones

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Robson and Ninemile soils—VIIs, nonirrigated; Ravenswood soil—VIIe, nonirrigated

*Range site:* Robson soil—028B045N; Ninemile soil—028B037N; Ravenswood soil—025X061N; Inclusion 1—none; Inclusion 2—028B027N; Inclusion 3—028B003N; Inclusion 4—none

## **3153—Robson-Locane-Softscrabble association**

*Positions on landscape:* Mountains

### **Composition**

*Major components:*

Robson cobbly loam, 15 to 30 percent slopes—55 percent

Locane gravelly loam, 30 to 50 percent slopes—20 percent

Softscrabble gravelly loam, 15 to 30 percent slopes—15 percent

*Contrasting inclusions:*

Welch loam, drained, 2 to 8 percent slopes—7 percent

Rock outcrop—2 percent

Rubble land—1 percent

### **Characteristics of the Robson Soil**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* Convex crests and shoulder slopes of mountains

*Parent material:* Residuum derived from siliceous tuff, rhyolite, and andesite

*Slope:* 15 to 30 percent

*Elevation:* 6,400 to 7,400 feet

*Average annual precipitation:* About 12 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 90 days

*Dominant present vegetation:* Low sagebrush, Sandberg bluegrass

#### **Typical Profile**

*Rock fragments on surface:* 20 percent cobbles, 10 percent pebbles

*Depth:* 0 to 2 inches

*Texture:* Cobbly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 2 to 15 inches

*Texture:* Very cobbly clay, extremely cobbly clay

*Structure:* Angular blocky

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 15 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 12 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 0.6 to 1.2 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.20; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

#### **Characteristics of the Locane Soil**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* Convex, south-facing side slopes of mountains

*Parent material:* Residuum derived from shale and conglomerate

*Slope:* 30 to 50 percent

*Elevation:* 6,400 to 7,400 feet

*Average annual precipitation:* About 12 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Indian ricegrass, needlegrass, Wyoming big sagebrush

#### **Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 6 to 14 inches

*Texture:* Very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 14 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.5 to 2.1 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

#### **Characteristics of the Softscrabble Soil**

*Classification:* Pachic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Concave, north-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from volcanic rock

*Slope:* 15 to 30 percent

*Elevation:* 6,400 to 7,400 feet

*Average annual precipitation:* About 16 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 70 days

*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

#### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 16 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 16 to 30 inches

*Texture:* Very cobbly clay loam

*Structure:* Angular blocky  
*Consistence:* Hard, friable  
*Reaction:* Neutral

*Depth:* 30 to 60 inches  
*Texture:* Gravelly clay loam  
*Structure:* Angular blocky  
*Consistence:* Hard, friable  
*Reaction:* Neutral

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 7.8 to 9.2 inches  
*Water-supplying capacity:* 14 inches  
*Runoff:* Rapid  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.20; T value—5; wind erodibility group—6  
*Hazard of erosion:* By water—moderate; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Cumulic Haplaquolls, fine-loamy, mixed, frigid  
*Positions on landscape:* Mountain drainageways  
*Distinctive present vegetation:* Basin big sagebrush, basin wildrye

##### **Inclusion 2**

*Positions on landscape:* Scattered peaks  
*Distinctive present vegetation:* None

##### **Inclusion 3**

*Positions on landscape:* Side slopes below areas of Rock outcrop  
*Distinctive present vegetation:* None

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Robson Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

##### **Locane Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

##### **Softscrabble Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

##### **Robson Soil**

*Range seeding:* Poor—droughty  
*Roadfill:* Poor—depth to rock, large stones  
*Topsoil:* Poor—depth to rock, too clayey, large stones  
*Daily cover for landfill:* Poor—depth to rock, large stones, slope  
*Shallow excavations:* Severe—depth to rock, large stones, slope  
*Local roads and streets:* Severe—depth to rock, large stones, slope  
*Pond reservoir areas:* Severe—depth to rock, slope  
*Embankments, dikes, and levees:* Severe—large stones  
*Sand:* Improbable source—excess fines, large stones  
*Gravel:* Improbable source—excess fines, large stones

##### **Locane Soil**

*Range seeding:* Poor—droughty, erodes easily  
*Roadfill:* Poor—depth to rock, slope  
*Topsoil:* Poor—depth to rock, small stones, slope  
*Daily cover for landfill:* Poor—depth to rock, small stones, slope  
*Shallow excavations:* Severe—depth to rock, slope  
*Local roads and streets:* Severe—depth to rock, slope  
*Pond reservoir areas:* Severe—depth to rock, slope  
*Embankments, dikes, and levees:* Severe—thin layer  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

##### **Softscrabble Soil**

*Range seeding:* Fair—erodes easily  
*Roadfill:* Fair—large stones, slope, shrink-swell  
*Topsoil:* Poor—small stones, area reclaim, slope  
*Daily cover for landfill:* Poor—small stones, slope  
*Shallow excavations:* Severe—slope  
*Local roads and streets:* Severe—slope  
*Pond reservoir areas:* Severe—slope  
*Embankments, dikes, and levees:* Moderate—large stones  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Robson and Locane soils—VIIe, nonirrigated; Softscrabble soil—VIe, nonirrigated  
*Range site:* Robson soil—024X018N; Locane soil—024X005N; Softscrabble soil—024X021N; Inclusion 1—028B024N; Inclusions 2 and 3—none

#### **3154—Robson-Locane-Rock outcrop association**

*Positions on landscape:* Foothills

### **Composition**

#### *Major components:*

Robson very gravelly loam, 8 to 15 percent slopes—40 percent

Locane very gravelly fine sandy loam, 8 to 15 percent slopes—30 percent

Rock outcrop—15 percent

#### *Contrasting inclusions:*

Cumulic Haploxerolls, fine-loamy, mixed, frigid, 2 to 8 percent slopes—8 percent

Aridic Argixerolls, clayey-skeletal, montmorillonitic, frigid, 15 to 30 percent slopes—4 percent

Itca very cobbly loam, 15 to 30 percent slopes—3 percent

### **Characteristics of the Robson Soil**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* North-facing summits and side slopes of foothills

*Parent material:* Residuum derived from siliceous tuff, rhyolite, and andesite

*Slope:* 8 to 15 percent

*Elevation:* 6,700 to 7,300 feet

*Average annual precipitation:* About 12 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 90 days

*Dominant present vegetation:* Low sagebrush, Sandberg bluegrass

#### **Typical Profile**

*Depth:* 0 to 2 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 2 to 15 inches

*Texture:* Very cobbly clay, extremely cobbly clay

*Structure:* Angular blocky

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 15 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 12 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 0.6 to 1.2 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—1; wind erodibility group—7

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Locane Soil**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* South-facing side slopes of foothills

*Parent material:* Residuum derived from shale and conglomerate

*Slope:* 8 to 15 percent

*Elevation:* 6,700 to 7,300 feet

*Average annual precipitation:* About 12 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Indian ricegrass, needlegrass, Wyoming big sagebrush

#### **Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Very gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 6 to 14 inches

*Texture:* Very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 14 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.4 to 1.8 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

**Characteristics of the Rock Outcrop**

*Positions on landscape:* Scattered peaks, side slopes of foothills

**Contrasting Inclusions****Inclusion 1**

*Classification:* Cumulic Haplaquolls, fine-loamy, mixed, frigid

*Positions on landscape:* Foothill drainageways

*Distinctive present vegetation:* Basin big sagebrush, bluegrass

**Inclusion 2**

*Classification:* Aridic Argixerolls, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* The upper, north-facing side slopes of foothills

*Distinctive present vegetation:* Low sagebrush, Idaho fescue

**Inclusion 3**

*Classification:* Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* Slightly concave side slopes of foothills near areas of Rock outcrop

*Distinctive present vegetation:* Singleleaf pinyon, mountain big sagebrush

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Robson Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Locane Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses****Robson Soil**

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth to rock, large stones

*Topsoil:* Poor—depth to rock, small stones

*Daily cover for landfill:* Poor—depth to rock, large stones

*Shallow excavations:* Severe—depth to rock, large stones

*Local roads and streets:* Severe—depth to rock, large stones

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

**Locane Soil**

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones

*Daily cover for landfill:* Poor—depth to rock, small stones

*Shallow excavations:* Severe—depth to rock

*Local roads and streets:* Severe—depth to rock

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Robson and Locane soils—VIIIs, nonirrigated; Rock outcrop—VIIIIs, nonirrigated

*Range site:* Robson soil—024X018N; Locane soil—024X005N; Rock outcrop—none; Inclusion 1—025X003N; Inclusion 2—024X027N; Inclusion 3—025X061N

**3155—Robson-Itca-Softscrabble association**

*Positions on landscape:* Mountains

**Composition**

*Major components:*

Robson very gravelly loam, 15 to 30 percent slopes—40 percent

Itca very gravelly loam, 30 to 50 percent slopes—25 percent

Softscrabble gravelly loam, 15 to 30 percent slopes—20 percent

*Contrasting inclusions:*

Aridic Argixerolls, loamy-skeletal, mixed, frigid, 15 to 30 percent slopes—5 percent

Rock outcrop—4 percent

Cumulic Haploxerolls, fine-loamy, mixed, frigid, 2 to 8 percent slopes—3 percent

Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid, 50 to 75 percent slopes—3 percent

**Characteristics of the Robson Soil**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* Convex crests, shoulder slopes, and side slopes of mountains

*Parent material:* Residuum derived from siliceous tuff, rhyolite, and andesite

*Slope:* 15 to 30 percent

*Elevation:* 6,700 to 7,500 feet

*Average annual precipitation:* About 12 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 90 days



*Dominant present vegetation:* Low sagebrush, Sandberg bluegrass

#### **Typical Profile**

*Rock fragments on surface:* 40 percent pebbles

*Depth:* 0 to 2 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 2 to 15 inches

*Texture:* Very cobbly clay, extremely cobbly clay

*Structure:* Angular blocky

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 15 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 12 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 0.6 to 1.2 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—1; wind erodibility group—7

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

#### **Characteristics of the Itca Soil**

*Classification:* Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* Eroded side slopes of mountains adjacent to areas of Rock outcrop

*Parent material:* Residuum derived from extrusive volcanic and pyroclastic rock

*Slope:* 30 to 50 percent

*Elevation:* 6,700 to 7,500 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Idaho fescue, bluegrass, singleleaf pinyon, Utah juniper, mountain big sagebrush

*Site index for singleleaf pinyon:* 65

#### **Typical Profile**

*Depth:* 0 to 9 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 9 to 17 inches

*Texture:* Very gravelly clay, very gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 17 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.5 to 2.0 inches

*Water-supplying capacity:* 10 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Softscrabble Soil**

*Classification:* Pachic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Concave, north-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from volcanic rock

*Slope:* 15 to 30 percent

*Elevation:* 7,000 to 7,500 feet

*Average annual precipitation:* About 16 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 70 days

*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

#### **Typical Profile**

*Depth:* 0 to 16 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 16 to 30 inches

*Texture:* Very cobbly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 30 to 60 inches  
*Texture:* Gravelly clay loam  
*Structure:* Angular blocky  
*Consistence:* Hard, friable  
*Reaction:* Neutral

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 7.8 to 9.2 inches  
*Water-supplying capacity:* 14 inches  
*Runoff:* Rapid  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.20; T value—5; wind erodibility group—6  
*Hazard of erosion:* By water—moderate; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Aridic Argixerolls, loamy-skeletal, mixed, frigid  
*Positions on landscape:* Convex toe slopes of mountains  
*Distinctive present vegetation:* Mountain big sagebrush, bluebunch wheatgrass, snowberry

##### **Inclusion 2**

*Positions on landscape:* Scattered peaks  
*Distinctive present vegetation:* None

##### **Inclusion 3**

*Classification:* Cumulic Haploxerolls, fine-loamy, mixed, frigid  
*Positions on landscape:* Mountain drainageways  
*Distinctive present vegetation:* Basin big sagebrush, basin wildrye

##### **Inclusion 4**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid  
*Positions on landscape:* Eroded, lower side slopes of mountains  
*Distinctive present vegetation:* Utah juniper, mountain big sagebrush, singleleaf pinyon

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Robson Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

##### **Itca Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Coniferous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

##### **Softscrabble Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

##### **Robson Soil**

*Range seeding:* Poor—droughty, small stones  
*Roadfill:* Poor—depth to rock, large stones  
*Topsoil:* Poor—depth to rock, small stones, slope  
*Daily cover for landfill:* Poor—depth to rock, large stones, slope  
*Shallow excavations:* Severe—depth to rock, large stones, slope  
*Local roads and streets:* Severe—depth to rock, large stones, slope  
*Pond reservoir areas:* Severe—depth to rock, slope  
*Embankments, dikes, and levees:* Severe—large stones  
*Sand:* Improbable source—excess fines, large stones  
*Gravel:* Improbable source—excess fines, large stones

##### **Itca Soil**

*Range seeding:* Poor—droughty, small stones  
*Roadfill:* Poor—depth to rock, slope  
*Topsoil:* Poor—depth to rock, small stones, slope  
*Daily cover for landfill:* Poor—depth to rock, too clayey, small stones  
*Shallow excavations:* Severe—depth to rock, slope  
*Local roads and streets:* Severe—depth to rock, slope  
*Pond reservoir areas:* Severe—depth to rock, slope  
*Embankments, dikes, and levees:* Severe—thin layer  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

##### **Softscrabble Soil**

*Range seeding:* Fair—erodes easily  
*Roadfill:* Fair—large stones, slope, shrink-swell  
*Topsoil:* Poor—small stones, area reclaim, slope  
*Daily cover for landfill:* Poor—small stones, slope  
*Shallow excavations:* Severe—slope  
*Local roads and streets:* Severe—slope  
*Pond reservoir areas:* Severe—slope  
*Embankments, dikes, and levees:* Moderate—large stones  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Robson and Itca soils—VIIs, nonirrigated; Softscrabble soil—VIe, nonirrigated

*Range site:* Robson soil—024X018N; Itca soil—025X061N; Softscrabble soil—024X021N; Inclusion 1—025X014N; Inclusion 2—none; Inclusion 3—028B024N; Inclusion 4—025X062N

### **3170—Teguro-Rubble land-Punchbowl association**

*Positions on landscape:* Mountains

#### **Composition**

*Major components:*

Teguro very gravelly loam, 30 to 50 percent slopes, rubbly—40 percent

Rubble land—25 percent

Punchbowl cobbly loam, 30 to 50 percent slopes—20 percent

*Contrasting inclusions:*

Jung very cobbly loam, 15 to 30 percent slopes—5 percent

Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 30 to 75 percent slopes—5 percent

Rock outcrop—5 percent

#### **Characteristics of the Teguro Soil**

*Classification:* Lithic Argixerolls, loamy, mixed, frigid

*Positions on landscape:* North-facing side slopes of mountains

*Parent material:* Residuum derived from tuff

*Slope:* 30 to 50 percent

*Elevation:* 7,000 to 8,000 feet

*Average annual precipitation:* About 12 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Bluegrass, needlegrass, mountain big sagebrush, singleleaf pinyon, Utah juniper

*Site index for common trees:* Singleleaf pinyon—30; Utah juniper—30

#### **Typical Profile**

*Rock fragments on surface:* 20 percent stones and boulders, 55 percent pebbles

*Depth:* 0 to 6 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 6 to 16 inches

*Texture:* Gravelly loam, gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Neutral

*Depth:* 16 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.9 to 2.4 inches

*Water-supplying capacity:* 10 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—1; wind erodibility group—7

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Rubble Land**

*Positions on landscape:* Side slopes of mountains

*Kind of material:* More than 90 percent cobbles

#### **Characteristics of the Punchbowl Soil**

*Classification:* Lithic Xerollic Haplargids, loamy, mixed, frigid

*Positions on landscape:* Slightly convex, east- and west-facing and upper, south-facing side slopes of mountains

*Parent material:* Residuum derived from andesite, dacite, rhyolite, and tuff

*Slope:* 30 to 50 percent

*Elevation:* 7,000 to 8,000 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 90 days

*Dominant present vegetation:* Black sagebrush, bluegrass, bottlebrush squirreltail

#### **Typical Profile**

*Depth:* 0 to 3 inches

*Texture:* Cobbly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 3 to 7 inches

*Texture:* Gravelly loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 7 to 11 inches

*Texture:* Gravelly clay loam

*Structure:* Angular blocky  
*Consistence:* Hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 11 inches  
*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 8 to 14 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 1.3 to 1.6 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—6  
*Hazard of erosion:* By water—severe; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic  
*Positions on landscape:* The lower, south-facing side slopes of mountains  
*Distinctive present vegetation:* Black sagebrush, rabbitbrush, bluegrass

##### **Inclusion 2**

*Classification:* Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic  
*Positions on landscape:* Severely eroded side slopes of mountains  
*Distinctive present vegetation:* Utah juniper, singleleaf pinyon, bluegrass

##### **Inclusion 3**

*Positions on landscape:* Scattered peaks  
*Distinctive present vegetation:* None

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Teguro Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Coniferous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

##### **Punchbowl Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

##### **Teguro Soil**

*Range seeding:* Poor—large stones, droughty  
*Roadfill:* Poor—depth to rock, slope  
*Topsoil:* Poor—depth to rock, small stones, slope  
*Daily cover for landfill:* Poor—depth to rock, small stones, slope  
*Shallow excavations:* Severe—depth to rock, slope  
*Local roads and streets:* Severe—depth to rock, slope  
*Pond reservoir areas:* Severe—depth to rock, slope  
*Embankments, dikes, and levees:* Severe—thin layer  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

##### **Punchbowl Soil**

*Range seeding:* Poor—droughty, erodes easily  
*Roadfill:* Poor—depth to rock, slope  
*Topsoil:* Poor—depth to rock, small stones, slope  
*Daily cover for landfill:* Poor—depth to rock, small stones, slope  
*Shallow excavations:* Severe—depth to rock, slope  
*Local roads and streets:* Severe—depth to rock, slope  
*Pond reservoir areas:* Severe—depth to rock, slope  
*Embankments, dikes, and levees:* Severe—thin layer  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Teguro soil—VIIs, nonirrigated; Rubble land—VIIIs, nonirrigated; Punchbowl soil—VIIe, nonirrigated  
*Range site:* Teguro soil—025X062N; Rubble land—none; Punchbowl soil—024X030N; Inclusion 1—024X030N; Inclusion 2—025X062N; Inclusion 3—none

#### **3181—Newlands-Packer-Hapgood association, moderately steep**

*Positions on landscape:* Mountains

#### **Composition**

##### *Major components:*

Newlands loam, 15 to 30 percent slopes—40 percent  
Packer very gravelly loam, 8 to 15 percent slopes—30 percent  
Hapgood gravelly loam, 30 to 50 percent slopes—15 percent  
*Contrasting inclusions:*  
Layview very cobbly loam, 8 to 15 percent slopes—8 percent  
Rock outcrop—4 percent  
Hackwood loam, 15 to 30 percent slopes, rubbly—3 percent

### **Characteristics of the Newlands Soil**

*Classification:* Argic Cryoborolls, fine-loamy, mixed

*Positions on landscape:* Smooth, intermediate and lower side slopes of mountains

*Parent material:* Colluvium and residuum derived from andesite and rhyolite

*Slope:* 15 to 30 percent

*Elevation:* 8,200 to 9,500 feet

*Average annual precipitation:* About 15 inches

*Average annual air temperature:* About 41 degrees F

*Frost-free season:* About 50 days

*Dominant present vegetation:* Mountain brome, needlegrass, mountain big sagebrush

#### **Typical Profile**

*Depth:* 0 to 10 inches

*Texture:* Loam

*Structure:* Granular

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 10 to 46 inches

*Texture:* Gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 46 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 40 to 60 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 6.3 to 7.3 inches

*Water-supplying capacity:* 14 inches

*Runoff:* Medium

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.28; T value—3; wind erodibility group—5

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Packer Soil**

*Classification:* Argic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* Convex crests and upper side slopes of mountains

*Parent material:* Mixed residuum that includes loess and volcanic ash

*Slope:* 8 to 15 percent

*Elevation:* 7,800 to 9,500 feet

*Average annual precipitation:* About 15 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 50 days

*Dominant present vegetation:* Idaho fescue, bluegrass, low sagebrush, black sagebrush

#### **Typical Profile**

*Depth:* 0 to 10 inches

*Texture:* Very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 10 to 21 inches

*Texture:* Extremely cobbly clay loam, extremely cobbly loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 21 to 60 inches

*Texture:* Extremely cobbly sandy loam, extremely cobbly loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Neutral

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 4.0 to 5.7 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.15; T value—3; wind erodibility group—7

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Hapgood Soil**

*Classification:* Pachic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* Concave, north-facing side slopes of mountains

*Parent material:* Colluvium that includes loess and volcanic ash

*Slope:* 30 to 50 percent

*Elevation:* 7,800 to 9,500 feet

*Average annual precipitation:* About 16 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 50 days

*Dominant present vegetation:* Idaho fescue, mountain brome, bluegrass, mountain big sagebrush, serviceberry

**Typical Profile**

*Rock fragments on surface:* 10 percent pebbles

*Depth:* 0 to 17 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 17 to 40 inches

*Texture:* Very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 40 to 60 inches

*Texture:* Very cobbly loam, very gravelly loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Neutral

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 5.8 to 7.4 inches

*Water-supplying capacity:* 16 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

**Contrasting Inclusions****Inclusion 1**

*Classification:* Argic Lithic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* Convex, windswept crests of mountains

*Distinctive present vegetation:* Black sagebrush, low sagebrush, rabbitbrush

**Inclusion 2**

*Positions on landscape:* Scattered peaks

*Distinctive present vegetation:* None

**Inclusion 3**

*Classification:* Pachic Cryoborolls, fine-loamy, mixed

*Positions on landscape:* Side slopes of mountains in areas where snow accumulates and below areas of Rock outcrop

*Distinctive present vegetation:* Quaking aspen

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Newlands Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Packer Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Hapgood Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses****Newlands Soil**

*Range seeding:* Fair—erodes easily

*Roadfill:* Fair—depth to rock, thin layer, slope

*Topsoil:* Poor—small stones, depth to rock, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Packer Soil**

*Range seeding:* Poor—small stones

*Roadfill:* Fair—large stones

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Moderate—slope, large stones

*Local roads and streets:* Moderate—slope, frost action, large stones

*Pond reservoir areas:* Severe—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage, large stones

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

**Hapgood Soil**

*Range seeding:* Poor—erodes easily

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Newlands soil—Vle, nonirrigated; Packer soil—VIIs, nonirrigated; Hapgood soil—VIIe, nonirrigated  
*Range site:* Newlands soil—028B029N; Packer soil—024X016N; Hapgood soil—024X032N; Inclusion 1—024X016N; Inclusion 2—none; Inclusion 3—025X065N

### **3182—Newlands-Packer-Hapgood association, strongly sloping**

*Positions on landscape:* Mountains

#### **Composition**

##### *Major components:*

Newlands extremely bouldery loam, 8 to 15 percent slopes—50 percent  
 Packer extremely gravelly loam, 8 to 15 percent slopes—30 percent  
 Hapgood gravelly loam, 2 to 8 percent slopes—10 percent

##### *Contrasting inclusions:*

Rock outcrop—4 percent  
 Lithic Cryoborolls, loamy-skeletal, mixed, 8 to 15 percent slopes—3 percent  
 Cumulic Cryaquolls, fine-loamy, mixed, 2 to 8 percent slopes—3 percent

#### **Characteristics of the Newlands Soil**

*Classification:* Argic Cryoborolls, fine-loamy, mixed

*Positions on landscape:* Concave side slopes of mountains

*Parent material:* Colluvium and residuum derived from andesite and rhyolite

*Slope:* 8 to 15 percent

*Elevation:* 7,800 to 9,500 feet

*Average annual precipitation:* About 15 inches

*Average annual air temperature:* About 41 degrees F

*Frost-free season:* About 50 days

*Dominant present vegetation:* Mountain brome, needlegrass, mountain big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 12 percent stones and boulders, 15 percent cobbles, 30 percent pebbles

*Depth:* 0 to 10 inches

*Texture:* Extremely bouldery loam

*Structure:* Granular

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 10 to 46 inches

*Texture:* Gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 46 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 40 to 60 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 5 to 7 inches

*Water-supplying capacity:* 14 inches

*Runoff:* Medium

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.15; T value—3; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Packer Soil**

*Classification:* Argic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* Convex, windswept shoulder slopes and upper side slopes of mountains

*Parent material:* Mixed residuum that includes loess and volcanic ash

*Slope:* 8 to 15 percent

*Elevation:* 7,800 to 9,500 feet

*Average annual precipitation:* About 15 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 50 days

*Dominant present vegetation:* Idaho fescue, bluegrass, low sagebrush, black sagebrush

#### **Typical Profile**

*Depth:* 0 to 10 inches

*Texture:* Extremely gravelly loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 10 to 21 inches

*Texture:* Extremely cobbly clay loam, extremely cobbly loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 21 to 60 inches

*Texture:* Extremely cobbly sandy loam, extremely cobbly loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Neutral

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 3.6 to 5.5 inches  
*Water-supplying capacity:* 12 inches  
*Runoff:* Medium  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.10; T value—3; wind erodibility group—8  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Moderate

**Characteristics of the Hapgood Soil**

*Classification:* Pachic Cryoborolls, loamy-skeletal, mixed  
*Positions on landscape:* Concave back slopes and incipient drainageways of mountains  
*Parent material:* Colluvium that includes loess and volcanic ash  
*Slope:* 2 to 8 percent  
*Elevation:* 7,800 to 9,500 feet  
*Average annual precipitation:* About 16 inches  
*Average annual air temperature:* About 42 degrees F  
*Frost-free season:* About 50 days  
*Dominant present vegetation:* Idaho fescue, mountain brome, bluegrass, mountain big sagebrush, serviceberry

**Typical Profile**

*Rock fragments on surface:* 10 percent pebbles  
*Depth:* 0 to 17 inches  
*Texture:* Gravelly loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral  
*Depth:* 17 to 40 inches  
*Texture:* Very gravelly loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral  
*Depth:* 40 to 60 inches  
*Texture:* Very cobbly loam, very gravelly loam  
*Structure:* Massive  
*Consistence:* Soft, very friable  
*Reaction:* Neutral

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate

*Available water capacity:* 5.8 to 7.4 inches  
*Water-supplying capacity:* 16 inches  
*Runoff:* Medium  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Moderate

**Contrasting Inclusions****Inclusion 1**

*Positions on landscape:* Scattered peaks of mountains  
*Distinctive present vegetation:* None

**Inclusion 2**

*Classification:* Lithic Cryoborolls, loamy-skeletal, mixed  
*Positions on landscape:* Windswept crests and shoulder slopes of mountains near areas of Rock outcrop  
*Distinctive present vegetation:* Low sagebrush, black sagebrush, bluegrass

**Inclusion 3**

*Classification:* Cumulic Cryaquolls, fine-loamy, mixed  
*Positions on landscape:* Narrow drainageways of mountains  
*Distinctive present vegetation:* Sedge, iris, alpine timothy

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Newlands Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

**Packer Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

**Hapgood Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses****Newlands Soil**

*Range seeding:* Poor—large stones  
*Roadfill:* Fair—depth to rock, thin layer  
*Topsoil:* Poor—small stones, depth to rock  
*Daily cover for landfill:* Poor—small stones  
*Shallow excavations:* Moderate—depth to rock, slope  
*Local roads and streets:* Moderate—slope, shrink-swell, frost action

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—thin layer, large stones

*Sand:* Improbable source—excess fines



*Gravel:* Improbable source—excess fines

### **Packer Soil**

*Range seeding:* Poor—small stones

*Roadfill:* Fair—large stones

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Moderate—slope, large stones

*Local roads and streets:* Severe—slope, frost action, large stones

*Pond reservoir areas:* Severe—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage, large stones

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

### **Hapgood Soil**

*Range seeding:* Fair—small stones

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Moderate—slope, seepage

*Embankments, dikes, and levees:* Moderate—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Newlands and Packer soils—VIIIs, nonirrigated; Hapgood soil—VIs, nonirrigated

*Range site:* Newlands soil—028B029N; Packer soil—024X016N; Hapgood soil—024X032N; Inclusion 1—none; Inclusion 2—024X016N; Inclusion 3—025X005N

## **3190—Softscrabble-Clanlaine-Walti association**

*Positions on landscape:* Mountains

### **Composition**

#### **Major components:**

Softscrabble very cobbly fine sandy loam, 15 to 50 percent slopes—45 percent

Clanlaine very gravelly loam, 30 to 50 percent slopes, extremely stony—25 percent

Walti very cobbly loam, 8 to 15 percent slopes—15 percent

#### **Contrasting inclusions:**

Lithic Xeric Torriorthents, loamy-skeletal, mixed, frigid, 8 to 30 percent slopes—6 percent

Aridic Haploxerolls, fine-loamy, mixed, frigid, 4 to 15 percent slopes—4 percent

Cleavage very gravelly fine sandy loam, 4 to 15 percent slopes—3 percent

Rock outcrop—2 percent

### **Characteristics of the Softscrabble Soil**

*Classification:* Pachic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Concave, south- and west-facing, upper side slopes of mountains

*Parent material:* Colluvium and residuum derived from volcanic rock

*Slope:* 15 to 50 percent

*Elevation:* 7,000 to 7,900 feet

*Average annual precipitation:* About 16 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 70 days

*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

### **Typical Profile**

*Depth:* 0 to 16 inches

*Texture:* Very cobbly fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 16 to 30 inches

*Texture:* Very cobbly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 30 to 60 inches

*Texture:* Very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 6 to 8 inches

*Water-supplying capacity:* 14 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.15; T value—5; wind erodibility group—8

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Clanlaine Soil**

*Classification:* Typic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Convex, north-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from rhyolite and andesitic tuff

*Slope:* 30 to 50 percent

*Elevation:* 7,000 to 7,900 feet

*Average annual precipitation:* About 15 inches

*Average annual air temperature:* About 41 degrees F

*Frost-free season:* About 70 days

*Dominant present vegetation:* Singleleaf pinyon, mountain big sagebrush, bluebunch wheatgrass, Utah juniper

*Site index for singleleaf pinyon:* 75

#### **Typical Profile**

*Rock fragments on surface:* 5 percent stones and boulders, 40 percent cobbles, 20 percent pebbles

*Depth:* 0 to 10 inches

*Texture:* Very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 10 to 39 inches

*Texture:* Very gravelly clay loam, very cobbly loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Mildly alkaline

*Depth:* 39 inches

*Kind of material:* Weathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 4.5 to 6.0 inches

*Water-supplying capacity:* 14 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.17; T value—2; wind erodibility group—7

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Walti Soil**

*Classification:* Aridic Argixerolls, fine, montmorillonitic, frigid

*Positions on landscape:* Convex shoulder slopes and lower side slopes of mountains

*Parent material:* Colluvium and residuum derived from rhyolite, andesite, and tuff

*Slope:* 8 to 15 percent

*Elevation:* 7,000 to 7,900 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, low sagebrush

#### **Typical Profile**

*Depth:* 0 to 4 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 4 to 10 inches

*Texture:* Clay loam, gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 10 to 30 inches

*Texture:* Clay

*Structure:* Prismatic

*Consistence:* Very hard, firm

*Reaction:* Neutral

*Depth:* 30 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 20 to 30 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Very slow

*Available water capacity:* 4 to 5 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—2; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Lithic Xeric Torriorthents, loamy-skeletal, mixed, frigid

*Positions on landscape:* Summits and shoulder slopes of mountains near areas of Rock outcrop

*Distinctive present vegetation:* Singleleaf pinyon, mountain big sagebrush, Utah juniper

**Inclusion 2**

*Classification:* Aridic Haploxerolls, fine-loamy, mixed, frigid

*Positions on landscape:* Intermountain drainageways

*Distinctive present vegetation:* Basin big sagebrush, basin wildrye

**Inclusion 3**

*Classification:* Lithic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Crests of mountains

*Distinctive present vegetation:* Low sagebrush, black sagebrush, bluegrass

**Inclusion 4**

*Positions on landscape:* Scattered peaks

*Distinctive present vegetation:* None

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Softscrabble Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Clan Alpine Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Walti Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses****Softscrabble Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Clan Alpine Soil**

*Range seeding:* Poor—small stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Walti Soil**

*Range seeding:* Poor—rooting depth, large stones

*Roadfill:* Poor—depth to rock, shrink-swell, low strength

*Topsoil:* Poor—too clayey, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, hard to pack

*Shallow excavations:* Severe—depth to rock

*Local roads and streets:* Severe—shrink-swell, low strength

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—hard to pack

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Softscrabble, Clan Alpine, and Walti soils—VIIIs, nonirrigated

*Range site:* Softscrabble soil—024X021N; Clan Alpine soil—025X061N; Walti soil—024X027N; Inclusion 1—025X062N; Inclusion 2—024X015N; Inclusion 3—024X016N; Inclusion 4—none

**3192—Softscrabble-Walti-Cleavage association**

*Positions on landscape:* Mountains

**Composition**

*Major components:*

Softscrabble very gravelly fine sandy loam, 15 to 30 percent slopes—35 percent

Walti extremely cobbly fine sandy loam, 15 to 30 percent slopes—30 percent

Cleavage very gravelly fine sandy loam, 4 to 15 percent slopes—20 percent

*Contrasting inclusions:*

Itca very cobbly loam, 15 to 30 percent slopes—9 percent

Aridic Argixerolls, loamy-skeletal, mixed, frigid, 30 to 50 percent slopes—4 percent

Rock outcrop—1 percent

Rubble land—1 percent

**Characteristics of the Softscrabble Soil**

*Classification:* Pachic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Concave side slopes of mountains

*Parent material:* Colluvium and residuum derived from volcanic rock

*Slope:* 15 to 30 percent

*Elevation:* 7,000 to 8,200 feet

*Average annual precipitation:* About 16 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 70 days

*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

#### **Typical Profile**

*Rock fragments on surface:* 5 percent cobbles, 40 percent pebbles

*Depth:* 0 to 16 inches

*Texture:* Very gravelly fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 16 to 30 inches

*Texture:* Very cobbly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 30 to 60 inches

*Texture:* Gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 7 to 9 inches

*Water-supplying capacity:* 14 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.15; T value—5; wind erodibility group—5

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Walti Soil**

*Classification:* Aridic Argixerolls, fine, montmorillonitic, frigid

*Positions on landscape:* Convex side slopes of mountains

*Parent material:* Colluvium and residuum derived from rhyolite, andesite, and tuff

*Slope:* 15 to 30 percent

*Elevation:* 7,000 to 8,200 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, low sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 50 percent cobbles, 20 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Extremely cobbly fine sandy loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 4 to 10 inches

*Texture:* Clay loam, gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 10 to 30 inches

*Texture:* Clay

*Structure:* Prismatic

*Consistence:* Very hard, firm

*Reaction:* Neutral

*Depth:* 30 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 20 to 30 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Very slow

*Available water capacity:* 3.5 to 5.0 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—2; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

#### **Characteristics of the Cleavage Soil**

*Classification:* Lithic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Summits and crests of mountains

*Parent material:* Residuum derived from rhyolite and other igneous rock

*Slope:* 4 to 15 percent

*Elevation:* 7,500 to 8,200 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Low sagebrush, black sagebrush, Idaho fescue, bluegrass

### Typical Profile

*Rock fragments on surface:* 10 percent cobbles, 60 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Very gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 4 to 18 inches

*Texture:* Very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Neutral

*Depth:* 18 inches

*Kind of material:* Unweathered bedrock

### Soil and Water Features

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.2 to 2.0 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—1; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### Contrasting Inclusions

#### Inclusion 1

*Classification:* Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* Crests of mountains near areas of Rock outcrop

*Distinctive present vegetation:* Singleleaf pinyon, mountain big sagebrush

#### Inclusion 2

*Classification:* Aridic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* South-facing side slopes of mountains

*Distinctive present vegetation:* Bluebunch wheatgrass, mountain big sagebrush

#### Inclusion 3

*Positions on landscape:* Scattered peaks

*Distinctive present vegetation:* None

#### Inclusion 4

*Positions on landscape:* Below areas of Rock outcrop

*Distinctive present vegetation:* None

### Major Current Uses

Livestock grazing, wildlife habitat

### Suitability for Wildlife Habitat Elements

#### Softscrabble Soil

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### Walti Soil

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### Cleavage Soil

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### Suitability and Limitations for Selected Uses

#### Softscrabble Soil

*Range seeding:* Poor—small stones

*Roadfill:* Fair—large stones, slope, shrink-swell

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### Walti Soil

*Range seeding:* Poor—rooting depth, large stones

*Roadfill:* Poor—depth to rock, shrink-swell, low strength

*Topsoil:* Poor—too clayey, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, hard to pack, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—shrink-swell, low strength, slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—hard to pack

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### Cleavage Soil

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones

*Daily cover for landfill:* Poor—depth to rock, small stones

*Shallow excavations:* Severe—depth to rock

*Local roads and streets:* Severe—depth to rock

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Softscrabble, Walti, and Cleavage soils—VIIIs, nonirrigated

*Range site:* Softscrabble soil—024X021N; Walti soil—024X027N; Cleavage soil—024X016N; Inclusion 1—025X061N; Inclusion 2—024X029N; Inclusions 3 and 4—none

## **3200—Dewar gravelly loam, 2 to 8 percent slopes**

*Positions on landscape:* Fan piedmonts

### **Composition**

*Major component:*

Dewar gravelly loam, 2 to 8 percent slopes—85 percent

*Contrasting inclusions:*

Durixerollic Haplargids, loamy-skeletal, mixed, mesic, 4 to 8 percent slopes—7 percent

Xerollic Durargids, loamy-skeletal, mixed, mesic, shallow, 15 to 30 percent slopes—5 percent

Chiara gravelly loam, 2 to 8 percent slopes—3 percent

### **Characteristics of the Dewar Soil**

*Classification:* Xerollic Durargids, loamy, mixed, mesic, shallow

*Positions on landscape:* Summits of fan piedmont remnants

*Parent material:* Loess and mixed silty alluvium

*Slope:* 2 to 8 percent

*Elevation:* 6,200 to 6,700 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, Indian ricegrass

### **Typical Profile**

*Depth:* 0 to 4 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 4 to 14 inches

*Texture:* Gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 14 to 50 inches

*Kind of material:* Indurated hardpan

*Structure:* Platy

*Consistence:* Extremely hard, extremely firm

### **Soil and Water Features**

*Depth to the hardpan:* 13 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.7 to 2.3 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.37; T value—1; wind erodibility group—7

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Inclusion 2**

*Classification:* Xerollic Durargids, loamy-skeletal, mixed, mesic, shallow

*Positions on landscape:* Side slopes of fan piedmont remnants

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Inclusion 3**

*Classification:* Xerollic Durorthids, loamy, mixed, mesic, shallow

*Positions on landscape:* Shoulder slopes of fan piedmont remnants

*Distinctive present vegetation:* Wyoming big sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—cemented pan, small stones

*Daily cover for landfill:* Poor—cemented pan

*Shallow excavations:* Severe—cemented pan

*Local roads and streets:* Severe—cemented pan  
*Pond reservoir areas:* Severe—cemented pan  
*Embankments, dikes, and levees:* Severe—piping  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Dewar soil—Ive, irrigated; VIIs, nonirrigated  
*Range site:* Dewar soil—028B010N; Inclusions 1, 2, and 3—028B010N

## **3210—Typic Argixerolls-Torripsammentic Haploxerolls-Glean association**

*Positions on landscape:* Mountains

### **Composition**

*Major components:*

Typic Argixerolls gravelly coarse sandy loam, 15 to 50 percent slopes—50 percent

Torripsammentic Haploxerolls cobbly loamy coarse sand, 30 to 50 percent slopes—20 percent

Glean very gravelly loam, 15 to 30 percent slopes—15 percent

*Contrasting inclusions:*

Torriorthentic Haploxerolls, loamy, mixed, frigid, shallow, 30 to 50 percent slopes—8 percent

Xerollic Haplargids, loamy, mixed, frigid, shallow, 30 to 50 percent slopes—5 percent

Dumps—2 percent

### **Characteristics of the Typic Argixerolls**

*Classification:* Typic Argixerolls

*Positions on landscape:* Slightly concave side slopes of mountains

*Parent material:* Residuum derived from granitic rock

*Slope:* 15 to 50 percent

*Elevation:* 6,500 to 7,500 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Bluebunch wheatgrass, Idaho fescue, mountain big sagebrush

### **Representative Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Gravelly coarse sandy loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 4 to 15 inches

*Texture:* Sandy clay loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Neutral

*Depth:* 15 inches

*Kind of material:* Weathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 10 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.8 to 2.2 inches

*Water-supplying capacity:* 11 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.20; T value—1; wind erodibility group—5

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Torripsammentic Haploxerolls**

*Classification:* Torripsammentic Haploxerolls

*Positions on landscape:* Convex, west-facing side slopes of mountains

*Parent material:* Residuum derived from granitic rock

*Slope:* 30 to 50 percent

*Elevation:* 6,500 to 7,500 feet

*Average annual precipitation:* About 15 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Singleleaf pinyon, mountain big sagebrush, bluegrass, bluebunch wheatgrass

*Site index for singleleaf pinyon:* 40

### **Representative Profile**

*Rock fragments on surface:* 10 percent cobbles, 10 percent pebbles

*Depth:* 0 to 2 inches

*Texture:* Cobbly loamy coarse sand

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 2 to 7 inches

*Texture:* Loamy coarse sand, gravelly loamy coarse sand, coarse sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Mildly alkaline

*Depth:* 7 inches

*Kind of material:* Weathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 5 to 30 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Rapid

*Available water capacity:* 0.2 to 0.5 inch

*Water-supplying capacity:* 9 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—1; wind erodibility group—3

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Glean Soil**

*Classification:* Pachic Haploxerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Concave, north- and east-facing side slopes of mountains

*Parent material:* Colluvium derived from various kinds of rock

*Slope:* 15 to 30 percent

*Elevation:* 6,500 to 7,500 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Bluebunch wheatgrass, Idaho fescue, mountain big sagebrush, serviceberry

### **Typical Profile**

*Rock fragments on surface:* 20 percent pebbles

*Depth:* 0 to 6 inches

*Texture:* Very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 6 to 39 inches

*Texture:* Very gravelly sandy loam, very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 39 to 51 inches

*Texture:* Very gravelly sandy loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 51 inches

*Kind of material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 40 to 60 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately rapid

*Available water capacity:* 3 to 5 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.10; T value—3; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Torriorthentic Haploxerolls, loamy, mixed, frigid, shallow

*Positions on landscape:* Convex, north- and east-facing side slopes of mountains

*Distinctive present vegetation:* Mountain big sagebrush

#### **Inclusion 2**

*Classification:* Xerollic Haplargids, loamy, mixed, frigid, shallow

*Positions on landscape:* South-facing side slopes of mountains

*Distinctive present vegetation:* Mountain big sagebrush, bluegrass

#### **Inclusion 3**

*Positions on landscape:* Scattered areas

*Kind of material:* Mixed soil material and rock from small mines and exploration scrapes

*Distinctive present vegetation:* None

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Typic Argixerolls**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Torripsammentic Haploxerolls**

*Wild herbaceous plants (nonirrigated):* Poor

*Coniferous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

#### **Glean Soil**

*Wild herbaceous plants (nonirrigated):* Good

*Shrubs (nonirrigated):* Good



### ***Suitability and Limitations for Selected Uses***

#### **Typic Argixerolls**

*Range seeding:* Poor—erodes easily, droughty  
*Roadfill:* Poor—depth to rock, slope  
*Topsoil:* Poor—depth to rock, small stones, slope  
*Daily cover for landfill:* Poor—depth to rock, slope  
*Shallow excavations:* Severe—depth to rock, slope  
*Local roads and streets:* Severe—slope  
*Pond reservoir areas:* Severe—depth to rock, slope  
*Embankments, dikes, and levees:* Severe—thin layer  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Torripsammentic Haploxerolls**

*Range seeding:* Poor—droughty  
*Roadfill:* Poor—depth to rock, slope  
*Topsoil:* Poor—depth to rock, small stones, too sandy  
*Daily cover for landfill:* Poor—depth to rock, slope  
*Shallow excavations:* Severe—depth to rock, slope  
*Local roads and streets:* Severe—slope  
*Pond reservoir areas:* Severe—depth to rock, slope  
*Embankments, dikes, and levees:* Severe—thin layer  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Glean Soil**

*Range seeding:* Poor—small stones  
*Roadfill:* Fair—slope, thin layer, depth to rock  
*Topsoil:* Poor—small stones, depth to rock, slope  
*Daily cover for landfill:* Poor—small stones, slope  
*Shallow excavations:* Severe—slope  
*Local roads and streets:* Severe—slope  
*Pond reservoir areas:* Severe—seepage, slope  
*Embankments, dikes, and levees:* Severe—seepage  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

### ***Interpretive Groups***

*Land capability classification:* Typic Argixerolls and Glean soil—VIIe, nonirrigated; Torripsammentic Haploxerolls—VII, nonirrigated  
*Range site:* Typic Argixerolls—024X021N; Torripsammentic Haploxerolls—025X061N; Glean soil—024X023N; Inclusion 1—024X021N; Inclusion 2—025X014N; Inclusion 3—none

### **3231—Stingdorn-Hooplite association**

*Positions on landscape:* Foothills

#### ***Composition***

##### ***Major components:***

Stingdorn extremely cobbly loam, 15 to 30 percent slopes—40 percent

Stingdorn very gravelly loam, 4 to 8 percent slopes—25 percent

Hooplite very gravelly loam, 15 to 30 percent slopes—20 percent

##### ***Contrasting inclusions:***

Lithic Haplargids, loamy-skeletal, mixed, mesic, 15 to 50 percent slopes—8 percent

Xerollic Durargids, loamy-skeletal, mixed, mesic, shallow, 8 to 15 percent slopes—4 percent

Rock outcrop—3 percent

### ***Characteristics of the Stingdorn Soil, Moderately Steep***

*Classification:* Typic Durargids, loamy-skeletal, mixed, mesic, shallow

*Positions on landscape:* South-facing side slopes of foothills

*Parent material:* Residuum derived from rhyolite, tuff, and andesite

*Slope:* 15 to 30 percent

*Elevation:* 5,700 to 6,000 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bottlebrush squirreltail, shadscale, bud sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 5 percent stones and boulders, 40 percent cobbles, 30 percent pebbles

*Depth:* 0 to 7 inches

*Texture:* Extremely cobbly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 7 to 15 inches

*Texture:* Very cobbly clay loam

*Structure:* Angular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 2 to 13

*Depth:* 15 to 20 inches

*Kind of material:* Indurated hardpan

*Depth:* 20 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to the hardpan:* 8 to 20 inches

*Depth to bedrock:* 8 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 1 to 2 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.10; T value—1;  
     wind erodibility group—8  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

### **Characteristics of the Stingdorn Soil, Moderately Sloping**

*Classification:* Typic Durargids, loamy-skeletal, mixed,  
     mesic, shallow  
*Positions on landscape:* Summits of foothills  
*Parent material:* Residuum derived from rhyolite, tuff,  
     and andesite  
*Slope:* 4 to 8 percent  
*Elevation:* 5,800 to 6,000 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bottlebrush squirreltail,  
     shadscale, bud sagebrush

#### **Typical Profile**

*Depth:* 0 to 7 inches  
*Texture:* Very gravelly loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5  
*Depth:* 7 to 15 inches  
*Texture:* Very cobbly clay loam  
*Structure:* Angular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 2 to 13  
*Depth:* 15 to 20 inches  
*Kind of material:* Indurated hardpan  
*Depth:* 20 inches  
*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to the hardpan:* 8 to 20 inches  
*Depth to bedrock:* 8 to 20 inches  
*Depth to a seasonal high water table:* More than 60  
     inches  
*Frequency of flooding:* None

*Permeability:* Moderately slow  
*Available water capacity:* 1 to 2 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.17; T value—1;  
     wind erodibility group—7  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

### **Characteristics of the Hooplite Soil**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal,  
     mixed, mesic  
*Positions on landscape:* North-facing side slopes of  
     foothills  
*Parent material:* Residuum derived from rhyolitic rock  
*Slope:* 15 to 30 percent  
*Elevation:* 5,700 to 6,000 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bottlebrush squirreltail,  
     black sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 45  
     percent pebbles  
*Depth:* 0 to 4 inches  
*Texture:* Very gravelly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, firm  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5  
*Depth:* 4 to 8 inches  
*Texture:* Very gravelly loam, very gravelly clay loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5  
*Depth:* 8 inches  
*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 6 to 14 inches  
*Depth to a seasonal high water table:* More than 60  
     inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 0.6 to 1.0 inch  
*Water-supplying capacity:* 8 inches

*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.17; T value—1;  
 wind erodibility group—6  
*Hazard of erosion:* By water—moderate; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Lithic Haplargids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Convex, lower, south-facing side slopes of foothills  
*Distinctive present vegetation:* Shadscale, galleta, bud sagebrush, spiny hopsage

#### **Inclusion 2**

*Classification:* Xerollic Durargids, loamy-skeletal, mixed, mesic, shallow  
*Positions on landscape:* North-facing shoulder slopes of foothills  
*Distinctive present vegetation:* Black sagebrush

#### **Inclusion 3**

*Positions on landscape:* Scattered peaks  
*Distinctive present vegetation:* None

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Stingdorn Soil, Moderately Steep**

*Wild herbaceous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Poor

#### **Stingdorn Soil, Moderately Sloping**

*Wild herbaceous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Poor

#### **Hooplite Soil**

*Wild herbaceous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Poor

### **Suitability and Limitations for Selected Uses**

#### **Stingdorn Soil, Moderately Steep**

*Range seeding:* Poor—too arid, droughty, large stones  
*Roadfill:* Poor—depth to rock, large stones  
*Topsoil:* Poor—depth to rock, cemented pan, large stones  
*Daily cover for landfill:* Poor—depth to rock, large stones, slope  
*Shallow excavations:* Severe—depth to rock, cemented pan, large stones  
*Local roads and streets:* Severe—depth to rock, slope, large stones

*Pond reservoir areas:* Severe—depth to rock, cemented pan, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Stingdorn Soil, Moderately Sloping**

*Range seeding:* Poor—too arid, droughty, small stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, cemented pan, large stones

*Daily cover for landfill:* Poor—depth to rock, large stones

*Shallow excavations:* Severe—depth to rock, cemented pan

*Local roads and streets:* Severe—depth to rock

*Pond reservoir areas:* Severe—depth to rock, cemented pan

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Hooplite Soil**

*Range seeding:* Poor—droughty, small stones, depth to rock

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Stingdorn and Hooplite soils—VIIIs, nonirrigated

*Range site:* Stingdorn soils—028B017N; Hooplite soil—028B016N; Inclusion 1—029X022N; Inclusion 2—028B016N; Inclusion 3—none

## **3251—Caphor-Tenabo-Spasprey association**

*Positions on landscape:* Fan piedmonts, fan skirts

### **Composition**

#### **Major components:**

Caphor fine sandy loam, 2 to 4 percent slopes—35 percent

Tenabo very gravelly fine sandy loam, 4 to 8 percent slopes—30 percent

Spasprey gravelly fine sandy loam, 2 to 8 percent slopes—20 percent

#### **Contrasting inclusions:**

Haploxerollic Durorthids, loamy, mixed, mesic, shallow, 2 to 4 percent slopes—8 percent

Xeric Torriorthents, loamy-skeletal, mixed, mesic, 0 to 4 percent slopes—7 percent

### **Characteristics of the Caphor Soil**

*Classification:* Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic

*Positions on landscape:* Fan skirts

*Parent material:* Mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 5,800 to 6,100 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Shadscale, Indian ricegrass, bottlebrush squirreltail

### **Typical Profile**

*Depth:* 0 to 7 inches

*Texture:* Fine sandy loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 7 to 17 inches

*Texture:* Sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 17 to 35 inches

*Texture:* Sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

*Depth:* 35 to 60 inches

*Texture:* Gravelly coarse sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow over very rapid

*Available water capacity:* 4.0 to 5.5 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Tenabo Soil**

*Classification:* Typic Nadurargids, loamy, mixed, mesic, shallow

*Positions on landscape:* The lower summits of fan piedmont remnants

*Parent material:* Thin loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 4 to 8 percent

*Elevation:* 5,800 to 6,100 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass

### **Typical Profile**

*Rock fragments on surface:* 50 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Very gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 4 to 15 inches

*Texture:* Clay loam, gravelly clay loam, silty clay loam

*Structure:* Prismatic

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

*Depth:* 15 to 28 inches

*Kind of material:* Indurated hardpan

*Structure:* Platy

*Consistence:* Extremely hard, extremely firm

*Depth:* 28 to 60 inches

*Texture:* Stratified very gravelly sandy loam to extremely gravelly coarse sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

### **Soil and Water Features**

*Depth to the hardpan:* 9 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 2.0 to 2.5 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—1; wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—moderate

*Potential for frost action:* Low

### **Characteristics of the Spasprey Soil**

*Classification:* Haploxerollic Durargids, fine-loamy, mixed, mesic

*Positions on landscape:* The upper summits of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 2 to 8 percent

*Elevation:* 5,800 to 6,100 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 5 to 26 inches

*Texture:* Clay loam, sandy clay loam

*Structure:* Prismatic

*Consistence:* Hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 26 to 33 inches

*Texture:* Cemented hardpan

*Depth:* 33 to 60 inches

*Texture:* Fine sandy loam

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

### **Soil and Water Features**

*Depth to the hardpan:* 20 to 30 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 4 to 5 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.32; T value—3; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Haploxerollic Durorthids, loamy, mixed, mesic, shallow

*Positions on landscape:* The highest parts of fan piedmont remnants

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Inclusion 2**

*Classification:* Xeric Torriorthents, loamy-skeletal, mixed, mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Spiny hopsage, Wyoming big sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Caphor Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

#### **Tenabo Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Spasprey Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Caphor Soil**

*Range seeding:* Poor—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Slight  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—seepage  
*Sand:* Probable source  
*Gravel:* Probable source

#### **Tenabo Soil**

*Range seeding:* Poor—too arid, droughty, excess sodium  
*Roadfill:* Poor—cemented pan  
*Topsoil:* Poor—cemented pan, small stones, too sandy  
*Daily cover for landfill:* Poor—cemented pan, seepage, too sandy  
*Shallow excavations:* Severe—cemented pan, cutbanks cave  
*Local roads and streets:* Severe—cemented pan  
*Pond reservoir areas:* Severe—seepage, cemented pan  
*Embankments, dikes, and levees:* Severe—seepage, excess sodium, excess salt  
*Sand:* Probable source  
*Gravel:* Probable source

#### **Spasprey Soil**

*Range seeding:* Fair—too arid  
*Roadfill:* Good  
*Topsoil:* Fair—cemented pan, area reclaim, too clayey  
*Daily cover for landfill:* Poor—cemented pan  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Moderate—shrink-swell, low strength, frost action  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—seepage, piping  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Caphor soil—IIIe, irrigated, and VIIc, nonirrigated; Tenabo soil—IVs, irrigated, and VIIs, nonirrigated; Spasprey soil—IIIe, irrigated, and VI, nonirrigated  
*Range site:* Caphor and Tenabo soils—028B017N; Spasprey soil—028B010N; Inclusion 1—028B010N; Inclusion 2—028B052N

### **3252—Caphor-Batan-Unsel association**

*Positions on landscape:* Piedmont slopes, alluvial flats

#### **Composition**

*Major components:*  
 Caphor fine sandy loam, 0 to 2 percent slopes—45 percent  
 Batan silt loam, 0 to 2 percent slopes—25 percent

Unsel gravelly fine sandy loam, 0 to 2 percent slopes—20 percent

#### **Contrasting inclusions:**

Creemon silt loam, strongly saline-sodic, 0 to 2 percent slopes—5 percent  
 Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic, 0 to 2 percent slopes—5 percent

#### **Characteristics of the Caphor Soil**

*Classification:* Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic  
*Positions on landscape:* Fan skirts  
*Parent material:* Mixed alluvium  
*Slope:* 0 to 2 percent  
*Elevation:* 5,600 to 5,800 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Shadscale, Indian ricegrass, bottlebrush squirreltail

#### **Typical Profile**

*Depth:* 0 to 7 inches  
*Texture:* Fine sandy loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 5 to 10  
*Depth:* 7 to 17 inches  
*Texture:* Sandy loam  
*Structure:* Massive  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 13 to 25  
*Depth:* 17 to 35 inches  
*Texture:* Sandy loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 4 to 16 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46  
*Depth:* 35 to 60 inches  
*Texture:* Gravelly coarse sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 8 millimhos per centimeter  
*Sodicity (SAR):* 2 to 13

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None  
*Permeability:* Moderately slow over very rapid  
*Available water capacity:* 4 to 6 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.24; T value—5;  
     wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—moderate  
*Potential for frost action:* Low

### **Characteristics of the Batan Soil**

*Classification:* Durorthidic Torriorthents, fine-silty, mixed  
     (calcareous), mesic  
*Positions on landscape:* Alluvial flat remnants  
*Parent material:* Silty alluvium that is high in content of  
     loess and pyroclastic material  
*Slope:* 0 to 2 percent  
*Elevation:* 5,600 to 5,800 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Shadscale, black  
     greasewood, bottlebrush squirreltail

### **Typical Profile**

*Depth:* 0 to 5 inches  
*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 20 to 40 millimhos per centimeter  
*Sodicity (SAR):* 46 to 60  
*Depth:* 5 to 68 inches  
*Texture:* Stratified silt loam to silty clay loam  
*Structure:* Massive  
*Consistence:* Hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60  
     inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 11 to 12 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.55; T value—5;  
     wind erodibility group—4L  
*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* Low

### **Characteristics of the Unsel Soil**

*Classification:* Duric Haplargids, fine-loamy, mixed,  
     mesic  
*Positions on landscape:* Nonburied fan piedmont  
     remnants  
*Parent material:* Mixed alluvium  
*Slope:* 0 to 2 percent  
*Elevation:* 5,600 to 5,800 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 51 degrees F  
*Frost-free season:* About 130 days  
*Dominant present vegetation:* Shadscale, Bailey  
     greasewood, bottlebrush squirreltail, galleta

### **Typical Profile**

*Rock fragments on surface:* 80 percent pebbles  
*Depth:* 0 to 8 inches  
*Texture:* Gravelly fine sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 8 to 18 inches  
*Texture:* Gravelly clay loam  
*Structure:* Subangular blocky  
*Consistence:* Hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 5 to 13  
*Depth:* 18 to 31 inches  
*Texture:* Gravelly sandy clay loam  
*Structure:* Subangular blocky  
*Consistence:* Hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 5 to 13

*Depth:* 31 to 60 inches  
*Texture:* Very gravelly loamy sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Strongly alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 13 to 25

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60  
     inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow

*Available water capacity:* 4 to 6 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.20; T value—2; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Duric Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Outer margins of fan skirts

*Distinctive present vegetation:* Shadscale, bud sagebrush

#### **Inclusion 2**

*Classification:* Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic

*Positions on landscape:* Alluvial flats

*Distinctive present vegetation:* Basin wildrye, black greasewood, basin big sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Caphor Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Batan Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Unsel Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

### **Suitability and Limitations for Selected Uses**

#### **Caphor Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim, excess salt

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

#### **Batan Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium

*Roadfill:* Poor—low strength

*Topsoil:* Poor—excess salt, excess sodium

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Severe—low strength

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Unsel Soil**

*Range seeding:* Poor—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

### **Restrictive Features for Selected Practices**

#### **Batan Soil**

*Drainage:* Deep to water

*Irrigation:* Excess salt, excess sodium

*Terraces and diversions:* Erodes easily

### **Interpretive Groups**

*Land capability classification:* Caphor soil—IIIs, irrigated, and VIIs, nonirrigated; Batan soil—VIIs, nonirrigated; Unsel soil—IIIs, irrigated, and VIIc, nonirrigated

*Range site:* Caphor and Batan soils—024X003N; Unsel soil—029X017N; Inclusion 1—024X003N; Inclusion 2—024X006N

### **3253—Caphor association**

*Positions on landscape:* Fan skirts

### **Composition**

*Major components:*

Caphor gravelly fine sandy loam, 0 to 2 percent slopes—65 percent

Caphor fine sandy loam, moderately saline, 0 to 2 percent slopes—25 percent

*Contrasting inclusions:*

Duric Camborthids, coarse-loamy, mixed, mesic, 0 to 4 percent slopes—5 percent



Duric Camborthids, coarse-loamy, mixed, mesic, 0 to 4 percent slopes—5 percent

### **Characteristics of the Caphor Soil**

*Classification:* Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic

*Positions on landscape:* The upper fan skirts

*Parent material:* Mixed alluvium

*Slope:* 0 to 2 percent

*Elevation:* 5,600 to 5,800 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Shadscale, Indian ricegrass, bottlebrush squirreltail

### **Typical Profile**

*Depth:* 0 to 7 inches

*Texture:* Gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 7 to 17 inches

*Texture:* Sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 17 to 35 inches

*Texture:* Sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

*Depth:* 35 to 60 inches

*Texture:* Gravelly coarse sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow over very rapid

*Available water capacity:* 3.7 to 5.5 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.15; T value—5; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Caphor Soil, Moderately Saline**

*Classification:* Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic

*Positions on landscape:* The lower fan skirts

*Parent material:* Mixed alluvium

*Slope:* 0 to 2 percent

*Elevation:* 5,600 to 5,800 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Shadscale, Indian ricegrass, bottlebrush squirreltail

### **Typical Profile**

*Depth:* 0 to 7 inches

*Texture:* Fine sandy loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 5 to 10

*Depth:* 7 to 17 inches

*Texture:* Sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

*Depth:* 17 to 35 inches

*Texture:* Sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 4 to 16 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

*Depth:* 35 to 60 inches

*Texture:* Gravelly coarse sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Strongly alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 2 to 13

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow over very rapid  
*Available water capacity:* 4 to 6 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—moderate  
*Potential for frost action:* Low

**Contrasting Inclusions****Inclusion 1**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Fan drainageways  
*Distinctive present vegetation:* Wyoming big sagebrush, needleandthread

**Inclusion 2**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Inset fans  
*Distinctive present vegetation:* Winterfat, Indian ricegrass, shadscale

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Caphor Soil**

*Wild herbaceous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Poor

**Caphor Soil, Moderately Saline**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor

**Suitability and Limitations for Selected Uses****Caphor Soil**

*Range seeding:* Poor—too arid  
*Roadfill:* Good  
*Topsoil:* Poor—small stones, area reclaim  
*Daily cover for landfill:* Poor—seepage, too sandy, small stones  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Slight  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—seepage  
*Sand:* Probable source  
*Gravel:* Probable source

**Caphor Soil, Moderately Saline**

*Range seeding:* Poor—too arid, excess salt, excess sodium  
*Roadfill:* Good  
*Topsoil:* Poor—small stones, area reclaim, excess salt  
*Daily cover for landfill:* Poor—seepage, too sandy, small stones  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Slight  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—seepage  
*Sand:* Probable source  
*Gravel:* Probable source

**Interpretive Groups**

*Land capability classification:* Caphor soil—IIIs, irrigated, and VIIc, nonirrigated; Caphor soil, moderately saline—IIIs, irrigated, and VIIs, nonirrigated  
*Range site:* Caphor soil—028B017N; Caphor soil, moderately saline—024X003N; Inclusion 1—028B010N; Inclusion 2—024X014N

**3270—Koyen fine sandy loam, 2 to 4 percent slopes**

*Positions on landscape:* Fan skirts

**Composition**

*Major component:*

Koyen fine sandy loam, 2 to 4 percent slopes—90 percent

*Contrasting inclusion:*

Izo very gravelly loamy sand, occasionally flooded, 2 to 4 percent slopes—10 percent

**Characteristics of the Koyen Soil**

*Classification:* Typic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Fan skirts  
*Parent material:* Alluvium derived from volcanic rock  
*Slope:* 2 to 4 percent  
*Elevation:* 5,700 to 5,800 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 52 degrees F  
*Frost-free season:* About 130 days  
*Dominant present vegetation:* Shadscale, bud sagebrush, galleta, Indian ricegrass

**Typical Profile**

*Depth:* 0 to 4 inches  
*Texture:* Fine sandy loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Moderately alkaline

*Depth:* 4 to 14 inches  
*Texture:* Sandy loam  
*Structure:* Subangular blocky  
*Consistence:* Soft, very friable  
*Reaction:* Moderately alkaline

*Depth:* 14 to 60 inches  
*Texture:* Gravelly sandy loam  
*Structure:* Massive  
*Consistence:* Slightly hard, very friable  
*Reaction:* Strongly alkaline

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately rapid  
*Available water capacity:* 4.8 to 6.0 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.32; T value—5; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Contrasting Inclusion**

*Classification:* Typic Torriorthents, sandy-skeletal, mixed, mesic  
*Positions on landscape:* Narrow inset fans, adjacent to channels  
*Distinctive present vegetation:* Spiny hopsage, burrobrush, Bailey greasewood

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

*Wild herbaceous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Poor

#### **Suitability and Limitations for Selected Uses**

*Range seeding:* Poor—too arid  
*Roadfill:* Good  
*Topsoil:* Fair—too sandy, small stones, area reclaim  
*Daily cover for landfill:* Fair—too sandy, thin layer  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Slight  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—thin layer  
*Sand:* Probable source  
*Gravel:* Probable source

#### **Interpretive Groups**

*Land capability classification:* Koyen soil—IIIe, irrigated, and VIIc, nonirrigated  
*Range site:* Koyen soil—029X017N; Inclusion—029X041N

#### **3310—Spasprey-Allor association**

*Positions on landscape:* Fan piedmonts

#### **Composition**

##### *Major components:*

Spasprey gravelly fine sandy loam, 2 to 4 percent slopes—50 percent  
 Allor gravelly loam, 2 to 8 percent slopes—35 percent  
*Contrasting inclusions:*  
 Orovada fine sandy loam, 0 to 4 percent slopes—8 percent  
 Durothidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 15 to 30 percent slopes—4 percent  
 Wholan silt loam, 0 to 2 percent slopes—3 percent

#### **Characteristics of the Spasprey Soil**

*Classification:* Haploxerollic Durargids, fine-loamy, mixed, mesic  
*Positions on landscape:* The upper fan piedmont remnants  
*Parent material:* Mixed alluvium  
*Slope:* 2 to 4 percent  
*Elevation:* 6,200 to 6,500 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles  
*Depth:* 0 to 5 inches  
*Texture:* Gravelly fine sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral  
*Depth:* 5 to 26 inches  
*Texture:* Clay loam, sandy clay loam  
*Structure:* Prismatic  
*Consistence:* Hard, friable  
*Reaction:* Mildly alkaline  
*Depth:* 26 to 33 inches  
*Texture:* Cemented hardpan  
*Consistence:* Extremely hard, brittle

*Depth:* 33 to 60 inches  
*Texture:* Fine sandy loam  
*Structure:* Massive  
*Consistence:* Hard, friable  
*Reaction:* Moderately alkaline

#### **Soil and Water Features**

*Depth to the hardpan:* 20 to 30 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 4 to 5 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Slow  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.32; T value—3; wind erodibility group—4  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Characteristics of the Allor Soil**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic  
*Positions on landscape:* The lower fan piedmont remnants  
*Parent material:* Mixed alluvium  
*Slope:* 2 to 8 percent  
*Elevation:* 6,200 to 6,500 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

#### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles  
*Depth:* 0 to 12 inches  
*Texture:* Gravelly loam  
*Structure:* Subangular blocky  
*Consistence:* Soft, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 12 to 34 inches  
*Texture:* Gravelly clay loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 34 to 60 inches  
*Texture:* Gravelly loamy sand, very gravelly loamy sand  
*Structure:* Massive

*Consistence:* Very hard, firm  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 5 to 7 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Medium  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Wyoming big sagebrush

##### **Inclusion 2**

*Classification:* Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic

*Positions on landscape:* Side slopes of fan piedmont remnants

*Distinctive present vegetation:* Wyoming big sagebrush, pine bluegrass

##### **Inclusion 3**

*Classification:* Typic Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Convex fan skirts

*Distinctive present vegetation:* Winterfat

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Spasprey Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

##### **Allor Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

##### **Spasprey Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Fair—cemented pan, area reclaim, too clayey  
*Daily cover for landfill:* Poor—cemented pan  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Moderate—shrink-swell, low strength, frost action

*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—seepage, piping

*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Allor Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim  
*Daily cover for landfill:* Poor—small stones  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Moderate—frost action, shrink-swell

*Pond reservoir areas:* Moderate—seepage, slope  
*Embankments, dikes, and levees:* Severe—seepage  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Spasprey soil—IIIs, irrigated, and VIs, nonirrigated; Allor soil—IIIs, irrigated, and VIIc, nonirrigated

*Range site:* Spasprey and Allor soils—028B010N; Inclusion 1—028B010N; Inclusion 2—027X008N; Inclusion 3—024X004N

### **3312—Spasprey-Bufferan-Orovada association**

*Positions on landscape:* Fan piedmonts

#### **Composition**

*Major components:*

Spasprey gravelly fine sandy loam, 0 to 2 percent slopes—35 percent

Bufferan gravelly loam, 2 to 8 percent slopes—35 percent

Orovada fine sandy loam, 2 to 4 percent slopes—15 percent

*Contrasting inclusions:*

Durixerollic Haplargids, clayey-skeletal, montmorillonitic, mesic, 15 to 30 percent slopes—5 percent

Xerollic Durargids, clayey-skeletal, montmorillonitic, mesic, 4 to 15 percent slopes—5 percent

Duric Camborthids, loamy-skeletal, mixed, mesic, 15 to 30 percent slopes—5 percent

#### **Characteristics of the Spasprey Soil**

*Classification:* Haploxerollic Durargids, fine-loamy, mixed, mesic

*Positions on landscape:* Summits of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 0 to 2 percent

*Elevation:* 6,200 to 6,500 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 5 to 26 inches

*Texture:* Clay loam, sandy clay loam

*Structure:* Prismatic

*Consistence:* Hard, friable

*Reaction:* Mildly alkaline

*Depth:* 26 to 33 inches

*Texture:* Cemented hardpan

*Consistence:* Extremely hard, brittle

*Depth:* 33 to 60 inches

*Texture:* Fine sandy loam

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

#### **Soil and Water Features**

*Depth to the hardpan:* 20 to 30 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 4 to 5 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.32; T value—3; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Bufferan Soil**

*Classification:* Xerollic Durargids, clayey, montmorillonitic, mesic, shallow

*Positions on landscape:* Side slopes of fan piedmont remnants

*Parent material:* Mixed alluvium  
*Slope:* 2 to 8 percent  
*Elevation:* 6,200 to 6,500 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Thurber needlegrass, bottlebrush squirreltail, Indian ricegrass

#### **Typical Profile**

*Rock fragments on surface:* 15 percent pebbles

*Depth:* 0 to 5 inches  
*Texture:* Gravelly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline

*Depth:* 5 to 16 inches  
*Texture:* Clay, gravelly clay, gravelly clay loam  
*Structure:* Prismatic  
*Consistence:* Hard, firm  
*Reaction:* Mildly alkaline

*Depth:* 16 to 27 inches  
*Kind of material:* Indurated hardpan  
*Structure:* Massive  
*Consistence:* Extremely hard, extremely firm

*Depth:* 27 to 60 inches  
*Texture:* Cemented hardpan  
*Structure:* Platy  
*Consistence:* Very hard, very firm

#### **Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 2 to 3 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.32; T value—1; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* High  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Characteristics of the Orovada Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Inset fans  
*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium  
*Slope:* 2 to 4 percent

*Elevation:* 6,200 to 6,500 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

#### **Typical Profile**

*Depth:* 0 to 8 inches  
*Texture:* Fine sandy loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral  
*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 8 to 20 inches  
*Texture:* Fine sandy loam, loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 20 to 65 inches  
*Texture:* Stratified fine sandy loam to silt loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 4 to 8 millimhos per centimeter

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 8.4 to 10.0 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Durixerollic Haplargids, clayey-skeletal, montmorillonitic, mesic  
*Positions on landscape:* Concave, north-facing side slopes of fan piedmont remnants  
*Distinctive present vegetation:* Wyoming big sagebrush

##### **Inclusion 2**

*Classification:* Xerollic Durargids, clayey-skeletal, montmorillonitic, mesic

*Positions on landscape:* Concave, higher parts on summits of concave fan piedmont remnants  
*Distinctive present vegetation:* Black sagebrush, Indian ricegrass

### **Inclusion 3**

*Classification:* Duric Camborthids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* South-facing side slopes of fan piedmont remnants  
*Distinctive present vegetation:* Shadscale, Wyoming big sagebrush, galleta

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Spasprey Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### **Buffaran Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### **Orovada Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Spasprey Soil**

*Range seeding:* Fair—too arid  
*Roadfill:* Good  
*Topsoil:* Fair—cemented pan, area reclaim, too clayey  
*Daily cover for landfill:* Poor—cemented pan  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Moderate—shrink-swell, low strength, frost action  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—seepage, piping  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Buffaran Soil**

*Range seeding:* Poor—droughty, rooting depth  
*Roadfill:* Poor—cemented pan, shrink-swell, low strength  
*Topsoil:* Poor—cemented pan, too clayey, small stones  
*Daily cover for landfill:* Poor—cemented pan, hard to pack  
*Shallow excavations:* Severe—cemented pan  
*Local roads and streets:* Severe—cemented pan, shrink-swell, low strength  
*Pond reservoir areas:* Severe—cemented pan  
*Embankments, dikes, and levees:* Severe—thin layer  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Orovada Soil**

*Range seeding:* Fair—too arid  
*Roadfill:* Good  
*Topsoil:* Fair—small stones, thin layer  
*Daily cover for landfill:* Good  
*Shallow excavations:* Slight  
*Local roads and streets:* Moderate—frost action  
*Pond reservoir areas:* Moderate—seepage, slope  
*Embankments, dikes, and levees:* Severe—piping  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Spasprey soil—IIIs, irrigated, and VIs, nonirrigated; Buffaran soil—VIIs, nonirrigated; Orovada soil—IIe, irrigated, and VIc, nonirrigated

*Range site:* Spasprey, Buffaran, and Orovada soils—028B010N; Inclusion 1—028B010N; Inclusion 2—028B011N; Inclusion 3—024X045N

## **3314—Spasprey-Allor-Orovada association**

*Positions on landscape:* Fan piedmonts

### **Composition**

#### **Major components:**

Spasprey gravelly fine sandy loam, 4 to 8 percent slopes—35 percent  
 Allor gravelly loam, 4 to 8 percent slopes—30 percent  
 Orovada fine sandy loam, 2 to 8 percent slopes—20 percent  
**Contrasting inclusions:**  
 Pineval gravelly loam, 4 to 15 percent slopes—8 percent  
 Buffaran gravelly loam, 4 to 8 percent slopes—4 percent  
 Duric Haplargids, fine-loamy, mixed, mesic, 4 to 8 percent slopes—3 percent

### **Characteristics of the Spasprey Soil**

*Classification:* Haploxerollic Durargids, fine-loamy, mixed, mesic  
*Positions on landscape:* Fan piedmont remnants  
*Parent material:* Mixed alluvium  
*Slope:* 4 to 8 percent  
*Elevation:* 5,500 to 6,000 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 5 inches  
*Texture:* Gravelly fine sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral

*Depth:* 5 to 26 inches  
*Texture:* Clay loam, sandy clay loam  
*Structure:* Prismatic  
*Consistence:* Hard, friable  
*Reaction:* Mildly alkaline

*Depth:* 26 to 33 inches  
*Texture:* Cemented hardpan  
*Consistence:* Extremely hard, brittle

*Depth:* 33 to 60 inches  
*Texture:* Fine sandy loam  
*Structure:* Massive  
*Consistence:* Hard, friable  
*Reaction:* Moderately alkaline

#### **Soil and Water Features**

*Depth to the hardpan:* 20 to 30 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 4 to 5 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Slow  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.32; T value—3; wind erodibility group—4  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Characteristics of the Allor Soil**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic  
*Positions on landscape:* Fan aprons  
*Parent material:* Mixed alluvium  
*Slope:* 4 to 8 percent  
*Elevation:* 5,500 to 6,000 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

#### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles  
*Depth:* 0 to 12 inches  
*Texture:* Gravelly loam

*Structure:* Subangular blocky  
*Consistence:* Soft, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 12 to 34 inches  
*Texture:* Gravelly clay loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 34 to 60 inches  
*Texture:* Gravelly loamy sand, very gravelly loamy sand  
*Structure:* Massive  
*Consistence:* Very hard, firm  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 5.0 to 6.4 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Medium  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Characteristics of the Orovada Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Inset fans  
*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium  
*Slope:* 2 to 8 percent  
*Elevation:* 5,500 to 6,000 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

#### **Typical Profile**

*Depth:* 0 to 8 inches  
*Texture:* Fine sandy loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral



*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 8 to 20 inches

*Texture:* Fine sandy loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 20 to 60 inches

*Texture:* Stratified fine sandy loam to silt loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 4 to 8 millimhos per centimeter

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 8.4 to 9.6 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Side slopes of fan piedmont remnants

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Inclusion 2**

*Classification:* Xerollic Durargids, clayey, montmorillonitic, mesic, shallow

*Positions on landscape:* The highest nonburied fan piedmont remnants

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Inclusion 3**

*Classification:* Duric Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* The lower parts of fan piedmont remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Spasprey Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Allor Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Orovada Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Spasprey Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Fair—cemented pan, area reclaim, too clayey

*Daily cover for landfill:* Poor—cemented pan

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—shrink-swell, low strength, frost action

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—seepage, piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Allor Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—frost action, shrink-swell

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Orovada Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Fair—small stones, thin layer

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Spasprey soil—IIIe, irrigated, and VI, nonirrigated; Allor soil—IIIe,

irrigated, and VIIc, nonirrigated; Orovada soil—IIIe, irrigated, and VIc, nonirrigated

*Range site:* Spasprey, Allor, and Orovada soils—028B010N; Inclusion 1—028B010N; Inclusion 2—028B010N; Inclusion 3—024X002N

### **3341—Halacan-Hatur-Rock outcrop association**

*Positions on landscape:* Mountains

#### **Composition**

*Major components:*

Halacan very gravelly loam, 30 to 50 percent slopes—40 percent

Hatur gravelly loam, 30 to 50 percent slopes—30 percent

Rock outcrop—15 percent

*Contrasting inclusions:*

Crylic Lithic Rendolls, loamy-skeletal, carbonatic, 4 to 15 percent slopes—9 percent

Pachic Cryoborolls, loamy-skeletal, mixed, 4 to 15 percent slopes—6 percent

#### **Characteristics of the Halacan Soil**

*Classification:* Crylic Lithic Rendolls, loamy-skeletal, carbonatic

*Positions on landscape:* Smooth to convex side slopes and shoulder slopes of mountains

*Parent material:* Residuum and colluvium derived from limestone

*Slope:* 30 to 50 percent

*Elevation:* 8,200 to 9,400 feet

*Average annual precipitation:* About 16 inches

*Average annual air temperature:* About 38 degrees F

*Frost-free season:* About 40 days

*Dominant present vegetation:* Idaho fescue, bluegrass, low sagebrush, black sagebrush, serviceberry

#### **Typical Profile**

*Rock fragments on surface:* 50 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Depth:* 5 to 17 inches

*Texture:* Extremely channery loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Depth:* 17 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately rapid

*Available water capacity:* 1 to 2 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—7

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Hatur Soil**

*Classification:* Crylic Rendolls, loamy-skeletal, carbonatic

*Positions on landscape:* East- and south-facing, slightly concave side slopes of mountains

*Parent material:* Colluvium and residuum derived from limestone

*Slope:* 30 to 50 percent

*Elevation:* 8,200 to 9,400 feet

*Average annual precipitation:* About 16 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 60 days

*Dominant present vegetation:* Idaho fescue, mountain brome, needlegrass, mountain big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 90 percent pebbles

*Depth:* 0 to 14 inches

*Texture:* Gravelly loam

*Structure:* Granular

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Depth:* 14 to 29 inches

*Texture:* Extremely gravelly loam, extremely gravelly sandy loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Depth:* 29 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 3.0 to 4.5 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.20; T value—2;  
wind erodibility group—6

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Rock Outcrop**

*Positions on landscape:* Scattered peaks and limestone ledges

*Dominant present vegetation:* None

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Cryic Lithic Rendolls, loamy-skeletal, carbonatic

*Positions on landscape:* Crests of mountains

*Distinctive present vegetation:* Black sagebrush, Idaho fescue

#### **Inclusion 2**

*Classification:* Pachic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* Intermountain drainageways

*Distinctive present vegetation:* Basin big sagebrush, basin wildrye

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Halacan Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Hatur Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Halacan Soil**

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—seepage, large stones

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

#### **Hatur Soil**

*Range seeding:* Poor—erodes easily

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, seepage, small stones

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Improbable source—small stones

*Gravel:* Improbable source—thin layer

### **Interpretive Groups**

*Land capability classification:* Halacan soil—VIIIs, nonirrigated; Hatur soil—VIIe, nonirrigated; Rock outcrop—VIIIIs, nonirrigated

*Range site:* Halacan soil—024X016N; Hatur soil—028B029N; Rock outcrop—none; Inclusion 1—024X042N; Inclusion 2—028B024N

## **3342—Halacan-Hapgood-Granzan association**

*Positions on landscape:* Mountains

### **Composition**

*Major components:*

Halacan very gravelly loam, 30 to 50 percent slopes—35 percent

Hapgood gravelly loam, 30 to 50 percent slopes—25 percent

Granzan very cobbly loam, 30 to 50 percent slopes—25 percent

*Contrasting inclusions:*

Cryic Lithic Rendolls, loamy-skeletal, carbonatic, 4 to 15 percent slopes—6 percent

Rock outcrop—5 percent

Pachic Cryoborolls, loamy-skeletal, mixed, 15 to 50 percent slopes—3 percent

Rubble land—1 percent

### **Characteristics of the Halacan Soil**

*Classification:* Cryic Lithic Rendolls, loamy-skeletal, carbonatic

*Positions on landscape:* Smooth to convex, broad shoulder slopes of mountains

*Parent material:* Residuum and colluvium derived from limestone

*Slope:* 30 to 50 percent

*Elevation:* 7,800 to 9,000 feet

*Average annual precipitation:* About 16 inches

*Average annual air temperature:* About 38 degrees F

*Frost-free season:* About 40 days

*Dominant present vegetation:* Idaho fescue, bluegrass,  
low sagebrush, black sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 50 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Depth:* 5 to 17 inches

*Texture:* Extremely channery loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Depth:* 17 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60  
inches

*Frequency of flooding:* None

*Permeability:* Moderately rapid

*Available water capacity:* 1 to 2 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.17; T value—1;  
wind erodibility group—7

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Hapgood Soil**

*Classification:* Pachic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* Concave side slopes of  
mountains

*Parent material:* Colluvium that includes loess and  
volcanic ash

*Slope:* 30 to 50 percent

*Elevation:* 7,800 to 9,000 feet

*Average annual precipitation:* About 16 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 50 days

*Dominant present vegetation:* Needlegrass, mountain  
brome, bluegrass, mountain big sagebrush,  
serviceberry

#### **Typical Profile**

*Rock fragments on surface:* 20 percent pebbles

*Depth:* 0 to 17 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 17 to 40 inches

*Texture:* Very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 40 to 60 inches

*Texture:* Very cobbly loam, very gravelly loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Neutral

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60  
inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 5.8 to 7.4 inches

*Water-supplying capacity:* 16 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.24; T value—5;  
wind erodibility group—6

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Granzan Soil**

*Classification:* Typic Calcixerolls, loamy-skeletal,  
carbonatic, frigid

*Positions on landscape:* Convex, south-facing side  
slopes of mountains

*Parent material:* Colluvium and residuum derived from  
calcareous shale and limestone

*Slope:* 30 to 50 percent

*Elevation:* 7,800 to 9,000 feet

*Average annual precipitation:* About 16 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 70 days

*Dominant present vegetation:* Bluebunch wheatgrass,  
mountain big sagebrush, needlegrass, snowberry

#### **Typical Profile**

*Rock fragments on surface:* 35 percent cobbles, 35  
percent pebbles

*Depth:* 0 to 12 inches

*Texture:* Very cobbly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Depth:* 12 to 43 inches  
*Texture:* Very gravelly loam, very gravelly silt loam  
*Structure:* Massive  
*Consistence:* Soft, very friable  
*Reaction:* Moderately alkaline

*Depth:* 43 inches  
*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 40 to 60 inches  
*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 5 to 7 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.17; T value—3; wind erodibility group—7

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Cryic Lithic Rendolls, loamy-skeletal, carbonatic

*Positions on landscape:* Protected crests and shoulder slopes of mountains

*Distinctive present vegetation:* Black sagebrush, bluegrass, Idaho fescue

##### **Inclusion 2**

*Positions on landscape:* Rims, severely eroded areas

*Distinctive present vegetation:* None

##### **Inclusion 3**

*Classification:* Pachic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* Windswept crests and nose slopes of mountains

*Distinctive present vegetation:* Low sagebrush, bluegrass

##### **Inclusion 4**

*Positions on landscape:* Below areas of Rock outcrop

*Distinctive present vegetation:* None

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Halacan Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

##### **Hapgood Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

##### **Granzan Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

##### **Halacan Soil**

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—seepage, large stones

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

##### **Hapgood Soil**

*Range seeding:* Poor—erodes easily

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

##### **Granzan Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—thin layer, large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Halacan and Granzan soils—VIIIs, nonirrigated; Hapgood soil—VIIe, nonirrigated

*Range site:* Halacan soil—024X016N; Hapgood soil—024X032N; Granzan soil—028B027N; Inclusion 1—024X042N; Inclusion 2—none; Inclusion 3—025X028N; Inclusion 4—none

**3411—Zoesta-Robson-Softscrabble association***Positions on landscape:* Mountains**Composition***Major components:*

Zoesta cobbly loam, 15 to 30 percent slopes—40 percent

Robson very cobbly loam, 15 to 30 percent slopes—25 percent

Softscrabble very cobbly loam, 15 to 50 percent slopes—20 percent

*Contrasting inclusions:*

Pachic Haploxerolls, loamy-skeletal, mixed, frigid, 2 to 8 percent slopes—5 percent

Aridic Argixerolls, fine-loamy, mixed, frigid, 15 to 50 percent slopes—5 percent

Rock outcrop—4 percent

Cleavage very gravelly loam, 8 to 15 percent slopes—1 percent

**Characteristics of the Zoesta Soil***Classification:* Xerollic Paleargids, fine, montmorillonitic, frigid*Positions on landscape:* The lower side slopes of mountains*Parent material:* Colluvium derived from various kinds of rock*Slope:* 15 to 30 percent*Elevation:* 6,400 to 7,600 feet*Average annual precipitation:* About 10 inches*Average annual air temperature:* About 45 degrees F*Frost-free season:* About 100 days*Dominant present vegetation:* Bluebunch wheatgrass, needlegrass, low sagebrush**Typical Profile***Rock fragments on surface:* 15 percent cobbles, 20 percent pebbles*Depth:* 0 to 7 inches*Texture:* Cobbly loam*Structure:* Platy*Consistence:* Slightly hard, very friable*Reaction:* Neutral*Depth:* 7 to 23 inches*Texture:* Clay*Structure:* Prismatic*Consistence:* Very hard, very firm*Reaction:* Mildly alkaline*Depth:* 23 to 31 inches*Texture:* Gravelly clay, gravelly clay loam*Structure:* Prismatic*Consistence:* Very hard, very firm*Reaction:* Moderately alkaline*Depth:* 31 to 60 inches*Texture:* Very gravelly loam, very gravelly clay loam*Structure:* Massive*Consistence:* Very hard, very firm*Reaction:* Moderately alkaline**Soil and Water Features***Depth to a seasonal high water table:* More than 60 inches*Frequency of flooding:* None*Permeability:* Very slow*Available water capacity:* 9 to 11 inches*Water-supplying capacity:* 12 inches*Runoff:* Rapid*Hydrologic group:* D*Erosion factors (upper layer):* K value—0.20; T value—1; wind erodibility group—6*Hazard of erosion:* By water—moderate; by wind—slight*Shrink-swell potential:* High*Corrosivity:* To steel—high; to concrete—low*Potential for frost action:* Low**Characteristics of the Robson Soil***Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid*Positions on landscape:* Shoulder slopes of mountains*Parent material:* Residuum derived from siliceous tuff, rhyolite, and andesite*Slope:* 15 to 30 percent*Elevation:* 6,600 to 8,000 feet*Average annual precipitation:* About 12 inches*Average annual air temperature:* About 44 degrees F*Frost-free season:* About 90 days*Dominant present vegetation:* Low sagebrush, Sandberg bluegrass**Typical Profile***Rock fragments on surface:* 50 percent cobbles and stones, 30 percent pebbles*Depth:* 0 to 2 inches*Texture:* Very cobbly loam*Structure:* Platy*Consistence:* Soft, very friable*Reaction:* Neutral*Salinity:* 0 to 1 millimho per centimeter*Depth:* 2 to 5 inches*Texture:* Very cobbly clay loam*Structure:* Subangular blocky*Consistence:* Slightly hard, friable*Reaction:* Mildly alkaline*Salinity:* 0 to 1 millimho per centimeter*Depth:* 5 to 15 inches*Texture:* Very cobbly clay, extremely cobbly clay*Structure:* Angular blocky

*Consistence:* Hard, firm  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 1 millimho per centimeter  
*Depth:* 15 inches  
*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 12 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 0.6 to 1.2 inches  
*Water-supplying capacity:* 10 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.20; T value—1; wind erodibility group—8  
*Hazard of erosion:* By water—moderate; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Low

#### **Characteristics of the Softscrabble Soil**

*Classification:* Pachic Argixerolls, loamy-skeletal, mixed, frigid  
*Positions on landscape:* Concave side slopes of mountains  
*Parent material:* Colluvium and residuum derived from volcanic rock  
*Slope:* 15 to 50 percent  
*Elevation:* 6,400 to 8,000 feet  
*Average annual precipitation:* About 16 inches  
*Average annual air temperature:* About 44 degrees F  
*Frost-free season:* About 70 days  
*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

#### **Typical Profile**

*Rock fragments on surface:* 25 percent cobbles, 30 percent pebbles  
*Depth:* 0 to 16 inches  
*Texture:* Very cobbly loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral  
*Depth:* 16 to 30 inches  
*Texture:* Very cobbly clay loam  
*Structure:* Angular blocky  
*Consistence:* Hard, friable  
*Reaction:* Neutral  
*Depth:* 30 to 60 inches  
*Texture:* Very gravelly clay loam  
*Structure:* Angular blocky

*Consistence:* Hard, friable  
*Reaction:* Neutral

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 6 to 8 inches  
*Water-supplying capacity:* 14 inches  
*Runoff:* Rapid  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.15; T value—5; wind erodibility group—8  
*Hazard of erosion:* By water—moderate; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Pachic Haploxerolls, loamy-skeletal, mixed, frigid  
*Positions on landscape:* Intermountain drainageways  
*Distinctive present vegetation:* Rose, basin big sagebrush, bluegrass

##### **Inclusion 2**

*Classification:* Aridic Argixerolls, fine-loamy, mixed, frigid  
*Positions on landscape:* Convex, north-facing nose slopes of mountains  
*Distinctive present vegetation:* Low sagebrush, Idaho fescue

##### **Inclusion 3**

*Positions on landscape:* Scattered peaks  
*Distinctive present vegetation:* None

##### **Inclusion 4**

*Classification:* Lithic Argixerolls, loamy-skeletal, mixed, frigid  
*Positions on landscape:* Crests of mountains  
*Distinctive present vegetation:* Low sagebrush, black sagebrush, bluegrass

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Zoesta Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

##### **Robson Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

##### **Softscrabble Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### ***Suitability and Limitations for Selected Uses***

#### **Zoesta Soil**

*Range seeding:* Poor—rooting depth

*Roadfill:* Fair—shrink-swell, slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—low strength, shrink-swell, slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Slight

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Robson Soil**

*Range seeding:* Poor—droughty, large stones

*Roadfill:* Poor—depth to rock, large stones

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, large stones, slope

*Shallow excavations:* Severe—depth to rock, large stones, slope

*Local roads and streets:* Severe—depth to rock, large stones, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

#### **Softscrabble Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### ***Interpretive Groups***

*Land capability classification:* Zoesta soil—VIs, nonirrigated; Robson and Softscrabble soils—VIIIs, nonirrigated

*Range site:* Zoesta and Robson soils—024X018N; Softscrabble soil—024X021N; Inclusion 1—028B024N; Inclusion 2—024X027N; Inclusion 3—none; Inclusion 4—024X016N

## **3415—Zoesta-Handy association**

*Positions on landscape:* Mountain valley fans

### ***Composition***

#### ***Major components:***

Zoesta cobbly loam, 8 to 15 percent slopes—50 percent

Handy gravelly loam, 15 to 30 percent slopes, extremely stony—35 percent

#### ***Contrasting inclusions:***

Aridic Duric Haploxerolls, loamy-skeletal, mixed, frigid, 15 to 30 percent slopes—6 percent

Aridic Haploxerolls, loamy-skeletal, mixed, frigid, 4 to 15 percent slopes—5 percent

Durixerollic Haplargids, fine, montmorillonitic, frigid, 15 to 30 percent slopes—4 percent

### ***Characteristics of the Zoesta Soil***

*Classification:* Xerollic Paleargids, fine, montmorillonitic, frigid

*Positions on landscape:* Convex mountain valley fan remnants

*Parent material:* Alluvium derived from various kinds of rock

*Slope:* 8 to 15 percent

*Elevation:* 6,300 to 7,000 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Bluebunch wheatgrass, needlegrass, low sagebrush

### ***Typical Profile***

*Rock fragments on surface:* 15 percent cobbles, 15 percent pebbles

*Depth:* 0 to 7 inches

*Texture:* Cobbly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 7 to 23 inches

*Texture:* Clay

*Structure:* Prismatic

*Consistence:* Very hard, very firm

*Reaction:* Mildly alkaline

*Depth:* 23 to 31 inches

*Texture:* Gravelly clay, gravelly clay loam

*Structure:* Prismatic

*Consistence:* Very hard, very firm

*Reaction:* Moderately alkaline

*Depth:* 31 to 60 inches

*Texture:* Very gravelly loam, very gravelly clay loam

*Structure:* Massive

*Consistence:* Very hard, very firm

*Reaction:* Moderately alkaline



**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Very slow

*Available water capacity:* 9 to 11 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.20; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

**Characteristics of the Handy Soil**

*Classification:* Xerollic Haplargids, fine, montmorillonitic, frigid

*Positions on landscape:* Convex side slopes of mountain valley fans

*Parent material:* Alluvium and colluvium derived from various kinds of rock

*Slope:* 15 to 30 percent

*Elevation:* 6,300 to 7,000 feet

*Average annual precipitation:* About 11 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Indian ricegrass, needlegrass, western wheatgrass, big sagebrush

**Typical Profile**

*Rock fragments on surface:* 10 percent stones, 30 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Depth:* 4 to 30 inches

*Texture:* Clay, gravelly clay

*Structure:* Prismatic

*Consistence:* Very hard, very firm

*Reaction:* Moderately alkaline

*Depth:* 30 to 60 inches

*Texture:* Gravelly loam to very gravelly loamy sand

*Structure:* Massive

*Consistence:* Hard, firm

*Reaction:* Moderately alkaline

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 8 to 10 inches

*Water-supplying capacity:* 11 inches

*Runoff:* Medium

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.20; T value—5; wind erodibility group—7

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

**Contrasting Inclusions****Inclusion 1**

*Classification:* Aridic Duric Haploxerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Convex inset fan remnants

*Distinctive present vegetation:* Mountain big sagebrush, gray rabbitbrush

**Inclusion 2**

*Classification:* Aridic Haploxerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Concave inset fans

*Distinctive present vegetation:* Basin big sagebrush, basin wildrye

**Inclusion 3**

*Classification:* Durixerollic Haplargids, fine, montmorillonitic, frigid

*Positions on landscape:* Convex, lower side slopes of mountain valley fan remnants

*Distinctive present vegetation:* Big sagebrush

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Zoesta Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Handy Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses****Zoesta Soil**

*Range seeding:* Poor—rooting depth

*Roadfill:* Fair—shrink-swell

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Moderate—too clayey, slope

*Local roads and streets:* Severe—low strength, shrink-swell

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Slight

*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Handy Soil**

*Range seeding:* Fair—too arid, small stones  
*Roadfill:* Fair—slope, shrink-swell  
*Topsoil:* Poor—small stones, area reclaim, slope  
*Daily cover for landfill:* Poor—small stones, slope  
*Shallow excavations:* Severe—slope  
*Local roads and streets:* Severe—low strength, shrink-swell, slope  
*Pond reservoir areas:* Severe—slope  
*Embankments, dikes, and levees:* Slight  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Zoesta soil—IVs, irrigated, and VIIs, nonirrigated; Handy soil—VIIe, nonirrigated  
*Range site:* Zoesta soil—024X018N; Handy soil—025X014N; Inclusion 1—025X014N; Inclusion 2—025X003N; Inclusion 3—024X018N

### **3417—Zoesta-Roca-Softscrabble association**

*Positions on landscape:* Mountains

#### **Composition**

*Major components:*  
 Zoesta cobbly loam, 8 to 15 percent slopes—40 percent  
 Roca very cobbly loam, 15 to 50 percent slopes—30 percent  
 Softscrabble gravelly loam, 15 to 30 percent slopes—15 percent  
*Contrasting inclusions:*  
 Cumulic Haplaquolls, fine-loamy, mixed, frigid, drained, 4 to 8 percent slopes—8 percent  
 Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid, 4 to 8 percent slopes—4 percent  
 Robson gravelly loam, 2 to 4 percent slopes—3 percent

#### **Characteristics of the Zoesta Soil**

*Classification:* Xerollic Paleargids, fine, montmorillonitic, frigid  
*Positions on landscape:* Convex foot slopes of mountains  
*Parent material:* Colluvium derived from various kinds of rock  
*Slope:* 8 to 15 percent  
*Elevation:* 6,500 to 7,400 feet  
*Average annual precipitation:* About 10 inches  
*Average annual air temperature:* About 45 degrees F  
*Frost-free season:* About 100 days

*Dominant present vegetation:* Bluebunch wheatgrass, needlegrass, low sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 15 percent cobbles, 15 percent pebbles

*Depth:* 0 to 7 inches  
*Texture:* Cobbly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral

*Depth:* 7 to 23 inches  
*Texture:* Clay  
*Structure:* Prismatic  
*Consistence:* Very hard, very firm  
*Reaction:* Mildly alkaline

*Depth:* 23 to 31 inches  
*Texture:* Gravelly clay, gravelly clay loam  
*Structure:* Prismatic  
*Consistence:* Very hard, very firm  
*Reaction:* Moderately alkaline  
*Depth:* 31 to 60 inches  
*Texture:* Very gravelly loam, very gravelly clay loam  
*Structure:* Massive  
*Consistence:* Very hard, very firm  
*Reaction:* Moderately alkaline

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Very slow  
*Available water capacity:* 9 to 11 inches  
*Water-supplying capacity:* 12 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.20; T value—1; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* High  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Characteristics of the Roca Soil**

*Classification:* Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid  
*Positions on landscape:* South-facing side slopes of mountains  
*Parent material:* Residuum derived from shale and chert  
*Slope:* 15 to 50 percent  
*Elevation:* 6,500 to 7,400 feet  
*Average annual precipitation:* About 10 inches  
*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Bluegrass, bluebunch wheatgrass, big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 20 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Very cobbly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 4 to 24 inches

*Texture:* Very gravelly clay loam, very gravelly clay

*Structure:* Angular blocky

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 24 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Very slow

*Available water capacity:* 2.6 to 4.5 inches

*Water-supplying capacity:* 11 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—2; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

#### **Characteristics of the Softscrabble Soil**

*Classification:* Pachic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* North-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from volcanic rock

*Slope:* 15 to 30 percent

*Elevation:* 6,500 to 7,400 feet

*Average annual precipitation:* About 16 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 70 days

*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

#### **Typical Profile**

*Rock fragments on surface:* 5 percent cobbles, 20 percent pebbles

*Depth:* 0 to 16 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 16 to 30 inches

*Texture:* Very cobbly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 30 to 60 inches

*Texture:* Gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 7.8 to 9.2 inches

*Water-supplying capacity:* 14 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.20; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Cumulic Haplaquolls, fine-loamy, mixed, frigid

*Positions on landscape:* Intermountain drainageways

*Distinctive present vegetation:* Basin wildrye, basin big sagebrush

##### **Inclusion 2**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid

*Positions on landscape:* The higher crests of mountains

*Distinctive present vegetation:* Big sagebrush, bluebunch wheatgrass

##### **Inclusion 3**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* The lower crests of mountains

*Distinctive present vegetation:* Low sagebrush, bluegrass

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Zoesta Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Roca Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Softscrabble Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Zoesta Soil**

*Range seeding:* Poor—rooting depth

*Roadfill:* Fair—shrink-swell

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Moderate—too clayey, slope

*Local roads and streets:* Severe—low strength, shrink-swell

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Slight

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Roca Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Softscrabble Soil**

*Range seeding:* Fair—small stones

*Roadfill:* Fair—large stones, slope, shrink-swell

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Zoesta soil—IVs, irrigated, and VIIs, nonirrigated; Roca soil—VIIs, nonirrigated; Softscrabble soil—VIe, nonirrigated

*Range site:* Zoesta soil—024X018N; Roca soil—024X028N; Softscrabble soil—024X021N; Inclusion 1—028B024N; Inclusion 2—025X014N; Inclusion 3—024X018N

### **3421—Belate-Softscrabble-Torro association**

*Positions on landscape:* Mountains

### **Composition**

*Major components:*

Belate very gravelly loam, 15 to 30 percent slopes—50 percent

Softscrabble gravelly loam, 15 to 30 percent slopes—20 percent

Torro gravelly loam, 30 to 50 percent slopes—15 percent

*Contrasting inclusions:*

Cleavage very cobbly loam, 4 to 15 percent slopes—6 percent

Welch loam, drained, 2 to 8 percent slopes—4 percent

Rock outcrop—3 percent

Welch loam, 2 to 8 percent slopes—2 percent

### **Characteristics of the Belate Soil**

*Classification:* Aridic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Convex side slopes of mountains

*Parent material:* Colluvium and residuum derived from tuff and andesite

*Slope:* 15 to 30 percent

*Elevation:* 7,000 to 8,000 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, low sagebrush

### **Typical Profile**

*Rock fragments on surface:* 15 percent cobbles and stones, 65 percent pebbles

*Depth:* 0 to 14 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Neutral

*Depth:* 14 to 60 inches

*Texture:* Very gravelly loam, very gravelly clay loam

*Structure:* Angular blocky  
*Consistence:* Hard, friable  
*Reaction:* Mildly alkaline

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 6.7 to 7.8 inches  
*Water-supplying capacity:* 12 inches  
*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—7

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Softscrabble Soil**

*Classification:* Pachic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Concave side slopes of mountains in areas where snow accumulates, incipient drainageways

*Parent material:* Colluvium and residuum derived from volcanic rock

*Slope:* 15 to 30 percent

*Elevation:* 7,000 to 8,000 feet

*Average annual precipitation:* About 16 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 70 days

*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

#### **Typical Profile**

*Rock fragments on surface:* 5 percent cobbles, 25 percent pebbles

*Depth:* 0 to 16 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 16 to 30 inches

*Texture:* Very cobbly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 30 to 60 inches

*Texture:* Gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 7.8 to 9.2 inches

*Water-supplying capacity:* 14 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.20; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Torro Soil**

*Classification:* Aridic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* South- and west-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from chert and shale

*Slope:* 30 to 50 percent

*Elevation:* 7,000 to 8,000 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Bluebunch wheatgrass, needlegrass, bluegrass, mountain big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 5 percent cobbles, 20 percent pebbles

*Depth:* 0 to 10 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 10 to 34 inches

*Texture:* Extremely gravelly loam, extremely gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 34 to 60 inches

*Texture:* Very gravelly sandy loam, very gravelly loamy coarse sand

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 5.0 to 6.5 inches  
*Water-supplying capacity:* 11 inches  
*Runoff:* Rapid  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.15; T value—5; wind erodibility group—8  
*Hazard of erosion:* By water—severe; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Moderate

**Contrasting Inclusions****Inclusion 1**

*Classification:* Lithic Argixerolls, loamy-skeletal, mixed, frigid  
*Positions on landscape:* Crests of mountains  
*Distinctive present vegetation:* Low sagebrush, black sagebrush, bluegrass

**Inclusion 2**

*Classification:* Cumulic Haplaquolls, fine-loamy, mixed, frigid  
*Positions on landscape:* Entrenched parts of intermountain drainageways  
*Distinctive present vegetation:* Basin big sagebrush, basin wildrye

**Inclusion 3**

*Positions on landscape:* Scattered peaks and eroded side slopes  
*Distinctive present vegetation:* None

**Inclusion 4**

*Classification:* Cumulic Haplaquolls, fine-loamy, mixed, frigid  
*Positions on landscape:* Smooth intermountain drainageways  
*Distinctive present vegetation:* Sedge, rush, bluegrass, iris, rose

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Belate Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

**Softscrabble Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

**Torro Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses****Belate Soil**

*Range seeding:* Poor—small stones  
*Roadfill:* Poor—slope  
*Topsoil:* Poor—small stones, area reclaim, slope  
*Daily cover for landfill:* Poor—small stones, slope  
*Shallow excavations:* Severe—slope  
*Local roads and streets:* Severe—slope  
*Pond reservoir areas:* Severe—slope  
*Embankments, dikes, and levees:* Slight  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

**Softscrabble Soil**

*Range seeding:* Fair—small stones  
*Roadfill:* Fair—large stones, slope, shrink-swell  
*Topsoil:* Poor—small stones, area reclaim, slope  
*Daily cover for landfill:* Poor—small stones, slope  
*Shallow excavations:* Severe—slope  
*Local roads and streets:* Severe—slope  
*Pond reservoir areas:* Severe—slope  
*Embankments, dikes, and levees:* Moderate—large stones  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

**Torro Soil**

*Range seeding:* Poor—erodes easily  
*Roadfill:* Poor—slope  
*Topsoil:* Poor—small stones, area reclaim, slope  
*Daily cover for landfill:* Poor—small stones, slope  
*Shallow excavations:* Severe—slope  
*Local roads and streets:* Severe—slope  
*Pond reservoir areas:* Severe—seepage, slope  
*Embankments, dikes, and levees:* Severe—seepage  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Belate soil—VII<sub>2</sub>, nonirrigated; Softscrabble soil—VI<sub>e</sub>, nonirrigated; Torro soil—VII<sub>e</sub>, nonirrigated

*Range site:* Belate soil—024X027N; Softscrabble soil—024X021N; Torro soil—024X029N; Inclusion 1—024X016N; Inclusion 2—028B024N; Inclusion 3—none; Inclusion 4—025X005N

**3422—Belate-Robson-Torro association**

*Positions on landscape:* Mountains

### **Composition**

#### *Major components:*

Belate gravelly loam, 15 to 30 percent slopes—45 percent

Robson gravelly loam, 15 to 30 percent slopes—25 percent

Torro gravelly loam, 15 to 30 percent slopes—15 percent

#### *Contrasting inclusions:*

Softscrabble cobbly loam, 15 to 30 percent slopes—9 percent

Rock outcrop—3 percent

Welch loam, drained, 2 to 8 percent slopes—2 percent

Welch loam, 2 to 8 percent slopes—1 percent

### **Characteristics of the Belate Soil**

*Classification:* Aridic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* North-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from tuff and andesite

*Slope:* 15 to 30 percent

*Elevation:* 7,000 to 8,000 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, low sagebrush

#### **Typical Profile**

*Depth:* 0 to 12 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Neutral

*Depth:* 12 to 60 inches

*Texture:* Very gravelly loam, very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Mildly alkaline

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 7.2 to 8.4 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.28; T value—5; wind erodibility group—7

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Robson Soil**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* Convex, south-facing crests, shoulder slopes, and side slopes of mountains

*Parent material:* Residuum derived from siliceous tuff, rhyolite, and andesite

*Slope:* 15 to 30 percent

*Elevation:* 7,000 to 8,000 feet

*Average annual precipitation:* About 12 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 90 days

*Dominant present vegetation:* Low sagebrush, Sandberg bluegrass

#### **Typical Profile**

*Rock fragments on surface:* 5 percent cobbles, 20 percent pebbles

*Depth:* 0 to 2 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 2 to 15 inches

*Texture:* Very cobbly clay, extremely cobbly clay

*Structure:* Angular blocky

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 15 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 12 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 0.6 to 1.2 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.20; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Torro Soil**

*Classification:* Aridic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* South-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from chert and shale

*Slope:* 15 to 30 percent

*Elevation:* 7,000 to 8,000 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Bluebunch wheatgrass, needlegrass, bluegrass, mountain big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 20 percent pebbles

*Depth:* 0 to 10 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 10 to 38 inches

*Texture:* Extremely gravelly loam, extremely gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 38 to 60 inches

*Texture:* Extremely gravelly sandy loam, extremely gravelly loamy coarse sand

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 4.8 to 6.0 inches

*Water-supplying capacity:* 11 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.20; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Pachic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Sheltered, lower side slopes of mountains

*Distinctive present vegetation:* Mountain big sagebrush, Idaho fescue

#### **Inclusion 2**

*Positions on landscape:* Scattered peaks and eroded side slopes

*Distinctive present vegetation:* None

#### **Inclusion 3**

*Classification:* Cumulic Haplaquolls, fine-loamy, mixed, frigid

*Positions on landscape:* Entrenched parts of intermountain drainageways

*Distinctive present vegetation:* Basin big sagebrush, basin wildrye

#### **Inclusion 4**

*Classification:* Cumulic Haplaquolls, fine-loamy, mixed, frigid

*Positions on landscape:* Smooth intermountain drainageways

*Distinctive present vegetation:* Sedge, bluegrass, rose, hairgrass

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Belate Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Robson Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Torro Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Belate Soil**

*Range seeding:* Fair—erodes easily

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Slight

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Robson Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—depth to rock, large stones



*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, large stones, slope

*Shallow excavations:* Severe—depth to rock, large stones, slope

*Local roads and streets:* Severe—depth to rock, large stones, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones, thin layer

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

### **Torro Soil**

*Range seeding:* Fair—erodes easily

*Roadfill:* Fair—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—seepage, small stones, slope

*Shallow excavations:* Severe—cutbanks cave, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

### **Interpretive Groups**

*Land capability classification:* Belate soil—Vle, nonirrigated; Robson and Torro soils—VIIe, nonirrigated

*Range site:* Belate soil—024X027N; Robson soil—024X018N; Torro soil—024X029N; Inclusion 1—024X021N; Inclusion 2—none; Inclusion 3—028B024N; Inclusion 4—025X005N

## **3423—Belate-Cleavage-Softscrabble association**

*Positions on landscape:* Mountains

### **Composition**

*Major components:*

Belate very gravelly loam, 30 to 50 percent slopes—35 percent

Cleavage extremely gravelly loam, 15 to 30 percent slopes—30 percent

Softscrabble gravelly loam, 15 to 30 percent slopes—20 percent

*Contrasting inclusions:*

Torro very gravelly loam, 30 to 50 percent slopes—9 percent

Rock outcrop—3 percent

Welch loam, drained, 2 to 8 percent slopes—2 percent

Welch loam, 2 to 8 percent slopes—1 percent

### **Characteristics of the Belate Soil**

*Classification:* Aridic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Convex, lower side slopes of mountains

*Parent material:* Colluvium and residuum derived from tuff and andesite

*Slope:* 30 to 50 percent

*Elevation:* 6,500 to 7,800 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, low sagebrush

### **Typical Profile**

*Rock fragments on surface:* 5 percent cobbles, 40 percent pebbles

*Depth:* 0 to 14 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Neutral

*Depth:* 14 to 60 inches

*Texture:* Very gravelly loam, very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Mildly alkaline

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 6.7 to 7.8 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Cleavage Soil**

*Classification:* Lithic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Convex, windswept crests, shoulder slopes, and upper side slopes of mountains

*Parent material:* Residuum derived from rhyolite and other igneous rock

*Slope:* 15 to 30 percent

*Elevation:* 6,500 to 7,800 feet  
*Average annual precipitation:* About 14 inches  
*Average annual air temperature:* About 44 degrees F  
*Frost-free season:* About 80 days  
*Dominant present vegetation:* Low sagebrush, black sagebrush, Idaho fescue, bluegrass

#### **Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 60 percent pebbles

*Depth:* 0 to 4 inches  
*Texture:* Extremely gravelly loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Neutral

*Depth:* 4 to 15 inches  
*Texture:* Very gravelly clay loam  
*Structure:* Angular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Neutral

*Depth:* 15 inches  
*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 1.5 to 2.5 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.05; T value—1; wind erodibility group—8  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Moderate

#### **Characteristics of the Softscrabble Soil**

*Classification:* Pachic Argixerolls, loamy-skeletal, mixed, frigid  
*Positions on landscape:* Concave side slopes of mountains  
*Parent material:* Colluvium and residuum derived from volcanic rock  
*Slope:* 15 to 30 percent  
*Elevation:* 6,500 to 7,800 feet  
*Average annual precipitation:* About 16 inches  
*Average annual air temperature:* About 44 degrees F  
*Frost-free season:* About 70 days  
*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

#### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 16 inches  
*Texture:* Gravelly loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral

*Depth:* 16 to 30 inches  
*Texture:* Very cobbly clay loam  
*Structure:* Angular blocky  
*Consistence:* Hard, friable  
*Reaction:* Neutral

*Depth:* 30 to 60 inches  
*Texture:* Gravelly clay loam  
*Structure:* Angular blocky  
*Consistence:* Hard, friable  
*Reaction:* Neutral

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 7.8 to 9.2 inches  
*Water-supplying capacity:* 14 inches  
*Runoff:* Rapid  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.20; T value—5; wind erodibility group—6  
*Hazard of erosion:* By water—moderate; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Aridic Argixerolls, loamy-skeletal, mixed, frigid  
*Positions on landscape:* South-facing side slopes of mountains  
*Distinctive present vegetation:* Bluebunch wheatgrass, mountain big sagebrush

##### **Inclusion 2**

*Positions on landscape:* Rims, severely eroded side slopes  
*Distinctive present vegetation:* None

##### **Inclusion 3**

*Classification:* Cumulic Haplaquolls, fine-loamy, mixed, frigid  
*Positions on landscape:* Mountain drainageways  
*Distinctive present vegetation:* Basin big sagebrush, sedge, iris, basin wildrye

**Inclusion 4**

*Classification:* Cumulic Haplaquolls, fine-loamy, mixed, frigid

*Positions on landscape:* Near seeps and springs

*Distinctive present vegetation:* Sedge, iris, bluegrass, hairgrass

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Belate Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Cleavage Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Softscrabble Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses****Belate Soil**

*Range seeding:* Poor—small stones, erodes easily

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Slight

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Cleavage Soil**

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Softscrabble Soil**

*Range seeding:* Fair—erodes easily

*Roadfill:* Fair—large stones, slope, shrink-swell

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Belate and Cleavage soils—VIIIs, nonirrigated; Softscrabble soil—VIe, nonirrigated

*Range site:* Belate soil—024X027N; Cleavage soil—024X016N; Softscrabble soil—024X021N; Inclusion 1—024X029N; Inclusion 2—none; Inclusion 3—028B024N; Inclusion 4—025X005N

**3450—Reluctan-Robson-Cleavage association**

*Positions on landscape:* Mountains

**Composition**

*Major components:*

Reluctan very cobbly loam, 30 to 50 percent slopes—45 percent

Robson very gravelly loam, 15 to 30 percent slopes—20 percent

Cleavage extremely gravelly loam, 4 to 15 percent slopes—20 percent

*Contrasting inclusions:*

Rock outcrop—4 percent

Rubble land—4 percent

Cumulic Haploxerolls, fine-loamy, mixed, frigid, 0 to 4 percent slopes—4 percent

Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid, 8 to 30 percent slopes—3 percent

**Characteristics of the Reluctan Soil**

*Classification:* Aridic Argixerolls, fine-loamy, mixed, frigid

*Positions on landscape:* Concave side slopes of mountains

*Parent material:* Colluvium and residuum derived from rhyolitic rock

*Slope:* 30 to 50 percent

*Elevation:* 6,800 to 7,800 feet

*Average annual precipitation:* About 12 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Bluebunch wheatgrass, needlegrass, Idaho fescue, mountain big sagebrush

**Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 20 percent pebbles

*Depth:* 0 to 9 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Neutral

*Depth:* 9 to 27 inches

*Texture:* Gravelly clay loam, gravelly loam

*Structure:* Subangular blocky

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 27 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 3.5 to 5.5 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Medium

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.10; T value—2; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Robson Soil**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* Convex side slopes and shoulder slopes of mountains

*Parent material:* Residuum derived from siliceous tuff, rhyolite, and andesite

*Slope:* 15 to 30 percent

*Elevation:* 6,800 to 7,800 feet

*Average annual precipitation:* About 12 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 90 days

*Dominant present vegetation:* Low sagebrush, Sandberg bluegrass

#### **Typical Profile**

*Rock fragments on surface:* 5 percent cobbles, 40 percent pebbles

*Depth:* 0 to 2 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 2 to 15 inches

*Texture:* Very cobbly clay, extremely cobbly clay

*Structure:* Angular blocky

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 15 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 12 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 0.6 to 1.2 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—1; wind erodibility group—7

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

#### **Characteristics of the Cleavage Soil**

*Classification:* Lithic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Crests of mountains

*Parent material:* Residuum derived from rhyolite and other igneous rock

*Slope:* 4 to 15 percent

*Elevation:* 6,800 to 7,800 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Low sagebrush, black sagebrush, Idaho fescue, bluegrass

#### **Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 60 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Extremely gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 4 to 18 inches

*Texture:* Very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Neutral

*Depth:* 18 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.4 to 2.0 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.05; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Positions on landscape:* Scattered peaks

*Distinctive present vegetation:* None

#### **Inclusion 2**

*Positions on landscape:* Rock stripes below areas of Rock outcrop

*Distinctive present vegetation:* None

#### **Inclusion 3**

*Classification:* Cumulic Haplaquolls, fine-loamy, mixed, frigid

*Positions on landscape:* Intermountain drainageways

*Distinctive present vegetation:* Basin big sagebrush, bluegrass

#### **Inclusion 4**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid

*Positions on landscape:* The lower, north-facing side slopes of mountains

*Distinctive present vegetation:* Black sagebrush, pine bluegrass

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Reluctan Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Robson Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Cleavage Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Reluctan Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Robson Soil**

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth to rock, large stones

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, large stones, slope

*Shallow excavations:* Severe—depth to rock, large stones, slope

*Local roads and streets:* Severe—depth to rock, large stones, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones, thin layer

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

#### **Cleavage Soil**

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones

*Daily cover for landfill:* Poor—depth to rock, small stones

*Shallow excavations:* Severe—depth to rock

*Local roads and streets:* Severe—depth to rock

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Reluctan, Robson, and Cleavage soils—VIIs, nonirrigated

*Range site:* Reluctan soil—024X021N; Robson soil—024X018N; Cleavage soil—024X016N; Inclusions 1 and 2—none; Inclusion 3—028B024N; Inclusion 4—024X031N

### **3453—Reluctan-Locane-Itca association**

*Positions on landscape:* Mountains

### **Composition**

*Major components:*

Reluctan very gravelly loam, 30 to 50 percent slopes—35 percent

Locane extremely gravelly sandy loam, 30 to 50 percent slopes—25 percent

Itca very cobbly loam, 15 to 30 percent slopes—25 percent

*Contrasting inclusions:*

Softscrabble gravelly loam, 15 to 30 percent slopes—7 percent

Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid, 15 to 30 percent slopes—5 percent

Welch loam, drained, 2 to 8 percent slopes—2 percent

Rock outcrop—1 percent

### **Characteristics of the Reluctan Soil**

*Classification:* Aridic Argixerolls, fine-loamy, mixed, frigid

*Positions on landscape:* North-, east-, and west-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from rhyolitic rock

*Slope:* 30 to 50 percent

*Elevation:* 6,500 to 7,600 feet

*Average annual precipitation:* About 12 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Bluebunch wheatgrass, needlegrass, Idaho fescue, mountain big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 35 percent pebbles

*Depth:* 0 to 9 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Neutral

*Depth:* 9 to 27 inches

*Texture:* Gravelly clay loam, gravelly loam

*Structure:* Subangular blocky

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 27 inches

*Kind of material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 3.0 to 5.6 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Medium

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.15; T value—2; wind erodibility group—7

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Locane Soil**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* South-facing side slopes of mountains

*Parent material:* Residuum derived from shale and conglomerate

*Slope:* 30 to 50 percent

*Elevation:* 6,500 to 7,600 feet

*Average annual precipitation:* About 12 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Indian ricegrass, needlegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 55 percent pebbles

*Depth:* 0 to 6 inches

*Texture:* Extremely gravelly sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 6 to 14 inches

*Texture:* Very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 14 inches

*Kind of material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.4 to 2.5 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Itca Soil**

*Classification:* Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* Crests, shoulder slopes, and convex side slopes of mountains

*Parent material:* Residuum derived from extrusive volcanic and pyroclastic rock

*Slope:* 15 to 30 percent

*Elevation:* 6,500 to 7,600 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Idaho fescue, bluegrass, singleleaf pinyon, Utah juniper, mountain big sagebrush

*Site index for singleleaf pinyon:* 70

### **Typical Profile**

*Rock fragments on surface:* 25 percent cobbles, 20 percent pebbles

*Depth:* 0 to 9 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 9 to 17 inches

*Texture:* Very cobbly clay, very gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 17 inches

*Kind of material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.5 to 2.5 inches

*Water-supplying capacity:* 10 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Pachic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Concave, north-facing side slopes of mountains

*Distinctive present vegetation:* Mountain big sagebrush, Idaho fescue, snowberry

#### **Inclusion 2**

*Classification:* Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* Stable, convex side slopes of mountains

*Distinctive present vegetation:* Low sagebrush, bluegrass

#### **Inclusion 3**

*Classification:* Cumulic Haplaquolls, fine-loamy, mixed, frigid

*Positions on landscape:* Inset fans at the base of mountains and along canyon bottoms

*Distinctive present vegetation:* Basin big sagebrush, basin wildrye

#### **Inclusion 4**

*Positions on landscape:* Scattered peaks

*Distinctive present vegetation:* None

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Reluctant Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Locane Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Itca Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Reluctant Soil**

*Range seeding:* Poor—small stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Locane Soil**

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope  
*Shallow excavations:* Severe—depth to rock, slope  
*Local roads and streets:* Severe—depth to rock, slope  
*Pond reservoir areas:* Severe—depth to rock, slope  
*Embankments, dikes, and levees:* Severe—thin layer  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Itca Soil**

*Range seeding:* Poor—droughty, large stones  
*Roadfill:* Poor—depth to rock, large stones  
*Topsoil:* Poor—depth to rock, small stones, too clayey  
*Daily cover for landfill:* Poor—depth to rock, too clayey, small stones  
*Shallow excavations:* Severe—depth to rock, large stones, slope  
*Local roads and streets:* Severe—depth to rock, large stones, slope  
*Pond reservoir areas:* Severe—depth to rock, slope  
*Embankments, dikes, and levees:* Severe—large stones  
*Sand:* Improbable source—excess fines, large stones  
*Gravel:* Improbable source—excess fines, large stones

#### **Interpretive Groups**

*Land capability classification:* Reluctan, Locane, and Itca soils—VIIIs, nonirrigated  
*Range site:* Reluctan soil—024X021N; Locane soil—024X035N; Itca soil—025X061N; Inclusion 1—024X021N; Inclusion 2—024X018N; Inclusion 3—028B024N; Inclusion 4—none

### **3455—Reluctan-Roca-Colbar association**

*Positions on landscape:* Mountains

#### **Composition**

*Major components:*  
 Reluctan very cobbly loam, 30 to 50 percent slopes—40 percent  
 Roca very cobbly loam, 30 to 50 percent slopes—30 percent  
 Colbar cobbly loam, 15 to 30 percent slopes—15 percent  
*Contrasting inclusions:*  
 Rock outcrop—7 percent  
 Pachic Haploxerolls, loamy-skeletal, mixed, frigid, 30 to 50 percent slopes—4 percent  
 Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 8 to 30 percent slopes—4 percent

#### **Characteristics of the Reluctan Soil**

*Classification:* Aridic Argixerolls, fine-loamy, mixed, frigid

*Positions on landscape:* North- and east-facing side slopes of mountains  
*Parent material:* Colluvium and residuum derived from rhyolitic rock  
*Slope:* 30 to 50 percent  
*Elevation:* 5,400 to 6,400 feet  
*Average annual precipitation:* About 12 inches  
*Average annual air temperature:* About 43 degrees F  
*Frost-free season:* About 80 days  
*Dominant present vegetation:* Bluebunch wheatgrass, needlegrass, Idaho fescue, mountain big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 20 percent pebbles

*Depth:* 0 to 9 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Neutral

*Depth:* 9 to 27 inches

*Texture:* Gravelly clay loam, gravelly loam

*Structure:* Subangular blocky

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 27 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 3.5 to 5.5 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Medium

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.10; T value—2; wind erodibility group—8

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Roca Soil**

*Classification:* Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* South- and west-facing side slopes of mountains

*Parent material:* Residuum derived from shale and chert

*Slope:* 30 to 50 percent

*Elevation:* 5,400 to 6,400 feet



*Average annual precipitation:* About 10 inches  
*Average annual air temperature:* About 45 degrees F  
*Frost-free season:* About 100 days  
*Dominant present vegetation:* Bluegrass, bluebunch wheatgrass, big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 20 percent pebbles

*Depth:* 0 to 5 inches  
*Texture:* Very cobbly loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral  
*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 5 to 27 inches  
*Texture:* Very gravelly clay loam, very gravelly clay  
*Structure:* Angular blocky  
*Consistence:* Hard, firm  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 27 inches  
*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Very slow  
*Available water capacity:* 2.6 to 4.5 inches  
*Water-supplying capacity:* 11 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.10; T value—2; wind erodibility group—8  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Characteristics of the Colbar Soil**

*Classification:* Xerollic Haplargids, fine-loamy, mixed, mesic  
*Positions on landscape:* The lower side slopes of mountains  
*Parent material:* Colluvium and residuum derived from rhyolite and andesite  
*Slope:* 15 to 30 percent  
*Elevation:* 5,400 to 6,000 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days

*Dominant present vegetation:* Needlegrass, bluegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 15 percent cobbles, 10 percent pebbles

*Depth:* 0 to 3 inches  
*Texture:* Cobbly loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Moderately alkaline

*Depth:* 3 to 22 inches  
*Texture:* Cobbly loam, gravelly clay loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline

*Depth:* 22 to 26 inches  
*Texture:* Gravelly loam, cobbly loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline

*Depth:* 26 inches  
*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 2.8 to 4.0 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Rapid  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.17; T value—2; wind erodibility group—6  
*Hazard of erosion:* By water—moderate; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Positions on landscape:* Rimrock on shoulder slopes and scattered peaks of mountains  
*Distinctive present vegetation:* None

##### **Inclusion 2**

*Classification:* Pachic Haploxerolls, loamy-skeletal, mixed, frigid  
*Positions on landscape:* North-facing snow pockets  
*Distinctive present vegetation:* Idaho fescue, bluebunch wheatgrass, mountain big sagebrush

**Inclusion 3**

*Classification:* Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic

*Positions on landscape:* Eroded, lower shoulder slopes and nose slopes of mountains

*Distinctive present vegetation:* Wyoming big sagebrush, bottlebrush squirreltail, ephedra

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Reluctan Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Roca Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Colbar Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses****Reluctan Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Roca Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Colbar Soil**

*Range seeding:* Fair—too arid, large stones, droughty

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—large stones, slope

*Daily cover for landfill:* Poor—depth to rock, large stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—seepage, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Reluctan and Roca soils—

VIIIs, nonirrigated; Colbar soil—VIe, nonirrigated

*Range site:* Reluctan soil—024X021N; Roca soil—

024X028N; Colbar soil—024X005N; Inclusion 1—

none; Inclusion 2—024X021N; Inclusion 3—

024X047N

**3457—Reluctan-Clanalpine-Roca association**

*Positions on landscape:* Mountains

**Composition**

*Major components:*

Reluctan very cobbly loam, 15 to 30 percent slopes—35 percent

Clanalpine very gravelly loam, 15 to 30 percent slopes—30 percent

Roca very cobbly loam, 15 to 50 percent slopes—20 percent

*Contrasting inclusions:*

Lithic Xerollic Haplargids, clayey-skeletal, mixed, mesic, 15 to 50 percent slopes—8 percent

Rock outcrop—4 percent

Xerollic Haplargids, fine-loamy, mixed, frigid, 8 to 15 percent slopes—3 percent

**Characteristics of the Reluctan Soil**

*Classification:* Aridic Argixerolls, fine-loamy, mixed, frigid

*Positions on landscape:* East- and west-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from rhyolitic rock

*Slope:* 15 to 30 percent

*Elevation:* 6,000 to 7,100 feet

*Average annual precipitation:* About 12 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Bluebunch wheatgrass, needlegrass, Idaho fescue, mountain big sagebrush

**Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 20 percent pebbles

*Depth:* 0 to 9 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Neutral

*Depth:* 9 to 27 inches

*Texture:* Gravelly clay loam, gravelly loam

*Structure:* Angular blocky

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 27 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 3 to 5 inches

*Water-supplying capacity:* 14 inches

*Runoff:* Medium

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.10; T value—2; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Clanalpine Soil**

*Classification:* Typic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* North-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from rhyolitic and andesitic tuff

*Slope:* 15 to 30 percent

*Elevation:* 6,000 to 7,100 feet

*Average annual precipitation:* About 15 inches

*Average annual air temperature:* About 41 degrees F

*Frost-free season:* About 70 days

*Dominant present vegetation:* Singleleaf pinyon, mountain big sagebrush, bluebunch wheatgrass, Utah juniper

*Site index for singleleaf pinyon:* 75

#### **Typical Profile**

*Rock fragments on surface:* 5 percent stones and boulders, 40 percent cobbles, 20 percent pebbles

*Depth:* 0 to 10 inches

*Texture:* Very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 10 to 39 inches

*Texture:* Very gravelly clay loam, very cobbly loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Mildly alkaline

*Depth:* 39 inches

*Kind of material:* Weathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 5 to 7 inches

*Water-supplying capacity:* 14 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.17; T value—2; wind erodibility group—7

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Roca Soil**

*Classification:* Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* South-facing side slopes of mountains

*Parent material:* Residuum derived from shale and chert

*Slope:* 15 to 50 percent

*Elevation:* 6,000 to 7,100 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Bluegrass, bluebunch wheatgrass, big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 20 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Very cobbly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 4 to 24 inches

*Texture:* Very gravelly clay loam, very gravelly clay

*Structure:* Angular blocky

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 24 inches

*Kind of material:* Unweathered bedrock

**Soil and Water Features***Depth to bedrock:* 20 to 40 inches*Depth to a seasonal high water table:* More than 60 inches*Frequency of flooding:* None*Permeability:* Very slow*Available water capacity:* 2.6 to 4.5 inches*Water-supplying capacity:* 11 inches*Runoff:* Rapid*Hydrologic group:* D*Erosion factors (upper layer):* K value—0.10; T value—2; wind erodibility group—8*Hazard of erosion:* By water—moderate; by wind—slight*Shrink-swell potential:* Moderate*Corrosivity:* To steel—high; to concrete—low*Potential for frost action:* Low**Contrasting Inclusions****Inclusion 1***Classification:* Lithic Xerollic Haplargids, clayey-skeletal, mixed, mesic*Positions on landscape:* The lower side slopes of mountains*Distinctive present vegetation:* Black sagebrush, Thurber needlegrass, bluegrass**Inclusion 2***Positions on landscape:* Scattered peaks*Distinctive present vegetation:* None**Inclusion 3***Classification:* Xerollic Haplargids, fine-loamy, mixed, frigid*Positions on landscape:* Intermountain drainageways*Distinctive present vegetation:* Basin big sagebrush, basin wildrye**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Reluctan Soil***Wild herbaceous plants (nonirrigated):* Fair*Shrubs (nonirrigated):* Fair**Clanalpine Soil***Wild herbaceous plants (nonirrigated):* Fair*Coniferous plants (nonirrigated):* Fair*Shrubs (nonirrigated):* Fair**Roca Soil***Wild herbaceous plants (nonirrigated):* Fair*Shrubs (nonirrigated):* Fair**Suitability and Limitations for Selected Uses****Reluctan Soil***Range seeding:* Poor—large stones*Roadfill:* Poor—depth to rock*Topsoil:* Poor—small stones, slope*Daily cover for landfill:* Poor—depth to rock, small stones, slope*Shallow excavations:* Severe—depth to rock, slope*Local roads and streets:* Severe—slope*Pond reservoir areas:* Severe—slope*Embankments, dikes, and levees:* Severe—thin layer*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines**Clanalpine Soil***Range seeding:* Poor—small stones*Roadfill:* Poor—depth to rock*Topsoil:* Poor—small stones, slope*Daily cover for landfill:* Poor—depth to rock, small stones, slope*Shallow excavations:* Severe—slope*Local roads and streets:* Severe—slope*Pond reservoir areas:* Severe—slope*Embankments, dikes, and levees:* Moderate—large stones*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines**Roca Soil***Range seeding:* Poor—large stones*Roadfill:* Poor—depth to rock, slope*Topsoil:* Poor—small stones, slope*Daily cover for landfill:* Poor—depth to rock, small stones, slope*Shallow excavations:* Severe—depth to rock, slope*Local roads and streets:* Severe—slope*Pond reservoir areas:* Severe—slope*Embankments, dikes, and levees:* Severe—thin layer*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines**Interpretive Groups***Land capability classification:* Reluctan, Clanalpine, and Roca soils—VIIIs, nonirrigated*Range site:* Reluctan soil—024X021N; Clanalpine soil—025X061N; Roca soil—024X028N; Inclusion 1—024X031N; Inclusion 2—none; Inclusion 3—025X014N**3461—Torro-Rubble land-Cleavage association***Positions on landscape:* Mountains**Composition***Major components:*

Torro very gravelly loam, 50 to 75 percent slopes—40 percent

Rubble land—30 percent

Cleavage extremely gravelly loam, 15 to 30 percent slopes—15 percent

*Contrasting inclusions:*

Reluctan very gravelly loam, 30 to 50 percent slopes—8 percent

Rock outcrop—5 percent

Aridic Haploxerolls, loamy-skeletal, mixed, frigid, 50 to 75 percent slopes—2 percent

### **Characteristics of the Torro Soil**

*Classification:* Aridic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* South- and west-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from chert and shale

*Slope:* 50 to 75 percent

*Elevation:* 6,400 to 8,200 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Bluebunch wheatgrass, needlegrass, bluegrass, mountain big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 15 percent cobbles, 30 percent pebbles

*Depth:* 0 to 10 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 10 to 34 inches

*Texture:* Extremely gravelly loam, extremely gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 34 to 60 inches

*Texture:* Extremely gravelly sandy loam, extremely gravelly loamy coarse sand

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 4 to 6 inches

*Water-supplying capacity:* 11 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.15; T value—5; wind erodibility group—7

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Rubble Land**

*Positions on landscape:* Side slopes of mountains

*Kind of material:* Rock stripes and talus deposits that are 95 percent stones and boulders

*Distinctive present vegetation:* None

### **Characteristics of the Cleavage Soil**

*Classification:* Lithic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Convex, windswept crests and shoulder slopes of mountains

*Parent material:* Residuum derived from rhyolite and other igneous rock

*Slope:* 15 to 30 percent

*Elevation:* 7,000 to 8,200 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Low sagebrush, black sagebrush, Idaho fescue, bluegrass

### **Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 60 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Extremely gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 4 to 15 inches

*Texture:* Very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Neutral

*Depth:* 15 inches

*Kind of material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.5 to 2.5 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.05; T value—1;  
wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Aridic Argixerolls, fine-loamy, mixed, frigid

*Positions on landscape:* Concave, north-facing side  
slopes of mountains

*Distinctive present vegetation:* Mountain big sagebrush,  
bluebunch wheatgrass, Idaho fescue

#### **Inclusion 2**

*Positions on landscape:* Rims of mountains

*Distinctive present vegetation:* None

#### **Inclusion 3**

*Classification:* Aridic Haploxerolls, loamy-skeletal,  
mixed, frigid

*Positions on landscape:* Immediately below areas of  
Rock outcrop and Rubble land on side slopes of  
mountains

*Distinctive present vegetation:* Chokecherry, oceanspray,  
currant

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Torro Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Cleavage Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Torro Soil**

*Range seeding:* Poor—small stones, erodes easily

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—seepage, small stones,  
slope

*Shallow excavations:* Severe—cutbanks cave, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

#### **Cleavage Soil**

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small  
stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones,  
thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Torro and Cleavage  
soils—VIIIs, nonirrigated; Rubble land—VIIIIs,  
nonirrigated

*Range site:* Torro soil—024X029N; Rubble land—none;  
Cleavage soil—024X016N; Inclusion 1—024X021N;  
Inclusion 2—none; Inclusion 3—024X034N

## **3462—Torro-Reluctan-Cleavage association**

*Positions on landscape:* Mountains

### **Composition**

*Major components:*

Torro extremely gravelly loam, 30 to 50 percent  
slopes—40 percent

Reluctan very cobbly loam, 30 to 50 percent slopes—30  
percent

Cleavage extremely gravelly loam, 8 to 30 percent  
slopes—15 percent

*Contrasting inclusions:*

Rock outcrop—4 percent

Softscrabble gravelly loam, 15 to 30 percent slopes—4  
percent

Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid,  
15 to 50 percent slopes—4 percent

Fluventic Haploxerolls, loamy-skeletal, mixed, frigid, 4  
to 15 percent slopes—3 percent

### **Characteristics of the Torro Soil**

*Classification:* Aridic Argixerolls, loamy-skeletal, mixed,  
frigid

*Positions on landscape:* South-facing side slopes of  
mountains

*Parent material:* Colluvium and residuum derived from  
chert and shale

*Slope:* 30 to 50 percent

*Elevation:* 6,500 to 7,500 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Bluebunch wheatgrass,  
needlegrass, bluegrass, mountain big sagebrush

**Typical Profile**

*Rock fragments on surface:* 20 percent cobbles, 45 percent pebbles

*Depth:* 0 to 10 inches

*Texture:* Extremely gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 10 to 34 inches

*Texture:* Extremely gravelly loam, extremely gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 34 to 60 inches

*Texture:* Extremely gravelly sandy loam, extremely gravelly loamy coarse sand

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 4 to 6 inches

*Water-supplying capacity:* 11 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.10; T value—5; wind erodibility group—8

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

**Characteristics of the Reluctant Soil**

*Classification:* Aridic Argixerolls, fine-loamy, mixed, frigid

*Positions on landscape:* North-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from rhyolitic rock

*Slope:* 30 to 50 percent

*Elevation:* 6,500 to 7,500 feet

*Average annual precipitation:* About 12 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Bluebunch wheatgrass, needlegrass, Idaho fescue, mountain big sagebrush

**Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 20 percent pebbles

*Depth:* 0 to 9 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Neutral

*Depth:* 9 to 27 inches

*Texture:* Gravelly clay loam, gravelly loam

*Structure:* Subangular blocky

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 27 inches

*Kind of material:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 3.5 to 6.0 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Medium

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.10; T value—2; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

**Characteristics of the Cleavage Soil**

*Classification:* Lithic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Crests and ridges of mountains

*Parent material:* Residuum derived from rhyolite and other igneous rock

*Slope:* 8 to 30 percent

*Elevation:* 7,000 to 7,500 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Low sagebrush, black sagebrush, Idaho fescue, bluegrass

**Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 60 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Extremely gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 4 to 15 inches

*Texture:* Very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Neutral

*Depth:* 15 inches

*Kind of material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.5 to 2.0 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.05; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Positions on landscape:* Scattered peaks

*Distinctive present vegetation:* None

#### **Inclusion 2**

*Classification:* Pachic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Concave, north-facing snow pockets

*Distinctive present vegetation:* Mountain big sagebrush, bluebunch wheatgrass

#### **Inclusion 3**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid

*Positions on landscape:* Convex shoulder slopes and upper side slopes of mountains

*Distinctive present vegetation:* Utah juniper, singleleaf pinyon, big sagebrush

#### **Inclusion 4**

*Classification:* Fluventic Haploxerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Intermountain drainageways

*Distinctive present vegetation:* Basin big sagebrush, bluegrass

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Torro Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Reluctan Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Cleavage Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Torro Soil**

*Range seeding:* Poor—small stones

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—seepage, small stones, slope

*Shallow excavations:* Severe—cutbanks cave, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

#### **Reluctan Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Cleavage Soil**

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones, thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Torro, Reluctan, and Cleavage soils—VIIIs, nonirrigated

*Range site:* Torro soil—024X029N; Reluctan soil—024X021N; Cleavage soil—024X016N; Inclusion



1—none; Inclusion 2—024X021N; Inclusion 3—024X029N; Inclusion 4—025X003N

### **3463—Torro-Clan Alpine-Itca association**

*Positions on landscape:* Mountains

#### **Composition**

*Major components:*

Torro extremely gravelly loam, 30 to 50 percent slopes—50 percent

Clan Alpine very cobbly loam, 30 to 50 percent slopes—20 percent

Itca very cobbly loam, 15 to 30 percent slopes—15 percent

*Contrasting inclusions:*

Durixerollic Camborthids, loamy-skeletal, mixed, frigid, 8 to 15 percent slopes—5 percent

Roca very gravelly loam, 15 to 30 percent slopes—5 percent

Rock outcrop—3 percent

Rubble land—2 percent

#### **Characteristics of the Torro Soil**

*Classification:* Aridic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* South- and west-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from chert and shale

*Slope:* 30 to 50 percent

*Elevation:* 6,500 to 7,500 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Bluebunch wheatgrass, needlegrass, bluegrass, mountain big sagebrush

#### **Typical Profile**

*Depth:* 0 to 10 inches

*Texture:* Extremely gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 10 to 34 inches

*Texture:* Extremely gravelly loam, extremely gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 34 to 60 inches

*Texture:* Extremely gravelly sandy loam, extremely gravelly loamy coarse sand

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate over rapid

*Available water capacity:* 4.3 to 5.6 inches

*Water-supplying capacity:* 11 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.10; T value—5; wind erodibility group—8

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Clan Alpine Soil**

*Classification:* Typic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* North-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from rhyolitic and andesitic tuff

*Slope:* 30 to 50 percent

*Elevation:* 6,500 to 7,500 feet

*Average annual precipitation:* About 15 inches

*Average annual air temperature:* About 41 degrees F

*Frost-free season:* About 70 days

*Dominant present vegetation:* Singleleaf pinyon, mountain big sagebrush, bluebunch wheatgrass, Utah juniper

*Site index for singleleaf pinyon:* 75

#### **Typical Profile**

*Rock fragments on surface:* 5 percent stones and boulders, 40 percent cobbles, 20 percent pebbles

*Depth:* 0 to 10 inches

*Texture:* Very cobbly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 10 to 39 inches

*Texture:* Very gravelly clay loam, very cobbly loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Mildly alkaline

*Depth:* 39 inches

*Kind of material:* Weathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 4 to 6 inches

*Water-supplying capacity:* 13 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.17; T value—2; wind erodibility group—8

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Itca Soil**

*Classification:* Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* Crests and shoulder slopes of mountains

*Parent material:* Residuum derived from extrusive volcanic and pyroclastic rock

*Slope:* 15 to 30 percent

*Elevation:* 7,200 to 7,700 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Idaho fescue, bluegrass, singleleaf pinyon, Utah juniper, mountain big sagebrush

*Site index for singleleaf pinyon:* 70

### **Typical Profile**

*Rock fragments on surface:* 20 percent cobbles, 30 percent pebbles

*Depth:* 0 to 2 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 2 to 14 inches

*Texture:* Very cobbly clay, very gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 14 inches

*Kind of material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.5 to 3.0 inches

*Water-supplying capacity:* 10 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durixerollic Camborthids, loamy-skeletal, mixed, frigid

*Positions on landscape:* Narrow intermountain drainageways

*Distinctive present vegetation:* Wyoming big sagebrush, Indian ricegrass

#### **Inclusion 2**

*Classification:* Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* The lower, south-facing side slopes of mountains

*Distinctive present vegetation:* Mountain big sagebrush, bluebunch wheatgrass

#### **Inclusion 3**

*Positions on landscape:* Scattered peaks

*Distinctive present vegetation:* None

#### **Inclusion 4**

*Positions on landscape:* Rock stripes below areas of Rock outcrop

*Distinctive present vegetation:* None

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Torro Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Clan Alpine Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Itca Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Torro Soil**

*Range seeding:* Poor—small stones

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—seepage, small stones, slope

*Shallow excavations:* Severe—cutbanks cave, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

### **Clan Alpine Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Itca Soil**

*Range seeding:* Poor—droughty, large stones

*Roadfill:* Poor—depth to rock, large stones

*Topsoil:* Poor—depth to rock, small stones, too clayey

*Daily cover for landfill:* Poor—depth to rock, too clayey, small stones

*Shallow excavations:* Severe—depth to rock, large stones, slope

*Local roads and streets:* Severe—depth to rock, large stones, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

### **Interpretive Groups**

*Land capability classification:* Torro, Clan Alpine, and Itca soils—VIIIs, nonirrigated

*Range site:* Torro soil—024X029N; Clan Alpine and Itca soils—025X061N; Inclusion 1—028B010N; Inclusion 2—024X028N; Inclusions 3 and 4—none

## **3464—Torro-Itca-Softscrabble association**

*Positions on landscape:* Mountains

### **Composition**

*Major components:*

Torro extremely gravelly loam, 30 to 50 percent slopes—50 percent

Itca very cobbly loam, 30 to 50 percent slopes—20 percent

Softscrabble gravelly loam, 15 to 50 percent slopes—15 percent

*Contrasting inclusions:*

Rock outcrop—5 percent

Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid, 15 to 50 percent slopes—4 percent

Welch loam, drained, 2 to 8 percent slopes—3 percent

Rubble land—3 percent

### **Characteristics of the Torro Soil**

*Classification:* Aridic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Convex, south- and west-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from chert and shale

*Slope:* 30 to 50 percent

*Elevation:* 6,800 to 8,000 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Bluebunch wheatgrass, needlegrass, bluegrass, mountain big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 15 percent cobbles, 65 percent pebbles

*Depth:* 0 to 10 inches

*Texture:* Extremely gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 10 to 34 inches

*Texture:* Extremely gravelly loam, extremely gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 34 to 60 inches

*Texture:* Extremely gravelly sandy loam, extremely gravelly loamy coarse sand

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 4.3 to 5.6 inches

*Water-supplying capacity:* 11 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.10; T value—5;  
wind erodibility group—8

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Itca Soil**

*Classification:* Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* Convex, north-facing side slopes of mountains

*Parent material:* Residuum derived from extrusive volcanic and pyroclastic rock

*Slope:* 30 to 50 percent

*Elevation:* 6,800 to 8,000 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Idaho fescue, bluegrass, singleleaf pinyon, Utah juniper, mountain big sagebrush

*Site index for singleleaf pinyon:* 70

### **Typical Profile**

*Depth:* 0 to 2 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 2 to 14 inches

*Texture:* Very cobbly clay, very gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 14 inches

*Kind of material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.8 to 2.3 inches

*Water-supplying capacity:* 10 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—1;  
wind erodibility group—8

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Softscrabble Soil**

*Classification:* Pachic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Concave side slopes of mountains

*Parent material:* Colluvium and residuum derived from volcanic rock

*Slope:* 15 to 50 percent

*Elevation:* 6,800 to 8,000 feet

*Average annual precipitation:* About 16 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 70 days

*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

### **Typical Profile**

*Depth:* 0 to 16 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 16 to 30 inches

*Texture:* Very cobbly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 30 to 60 inches

*Texture:* Gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 7.8 to 9.2 inches

*Water-supplying capacity:* 14 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.20; T value—5;  
wind erodibility group—6

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Positions on landscape:* Scattered peaks

*Distinctive present vegetation:* None

**Inclusion 2**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid

*Positions on landscape:* Convex, broad crests and shoulder slopes of mountains

*Distinctive present vegetation:* Low sagebrush

**Inclusion 3**

*Classification:* Cumulic Haplaquolls, fine-loamy, mixed, frigid

*Positions on landscape:* Canyon bottoms, mountain drainageways

*Distinctive present vegetation:* Basin big sagebrush, basin wildrye

**Inclusion 4**

*Positions on landscape:* Side slopes of mountains

*Distinctive present vegetation:* None

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Torro Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Itca Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Softscrabble Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses****Torro Soil**

*Range seeding:* Poor—small stones

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—seepage, small stones, slope

*Shallow excavations:* Severe—cutbanks cave, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

**Itca Soil**

*Range seeding:* Poor—droughty, large stones

*Roadfill:* Poor—depth to rock, large stones, slope

*Topsoil:* Poor—depth to rock, small stones, too clayey

*Daily cover for landfill:* Poor—depth to rock, too clayey, small stones

*Shallow excavations:* Severe—depth to rock, large stones, slope

*Local roads and streets:* Severe—depth to rock, large stones, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

**Softscrabble Soil**

*Range seeding:* Poor—erodes easily

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Torro and Itca soils—VIIIs, nonirrigated; Softscrabble soil—VIIe, nonirrigated

*Range site:* Torro soil—024X029N; Itca soil—024X061N; Softscrabble soil—024X021N; Inclusion 1—none; Inclusion 2—024X018N; Inclusion 3—028B024N; Inclusion 4—none

**3465—Torro-Clanalpine-Softscrabble association**

*Positions on landscape:* Mountains

**Composition**

*Major components:*

Torro extremely gravelly loam, 30 to 50 percent slopes—35 percent

Clanalpine extremely cobbly loam, 30 to 50 percent slopes—30 percent

Softscrabble loam, 30 to 50 percent slopes—20 percent

*Contrasting inclusions:*

Rock outcrop—6 percent

Itca very cobbly loam, 30 to 50 percent slopes—6 percent

Lithic Argixerolls, loamy-skeletal, mixed, frigid, 15 to 50 percent slopes—3 percent

**Characteristics of the Torro Soil**

*Classification:* Aridic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Concave, south- and west-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from chert and shale

*Slope:* 30 to 50 percent

*Elevation:* 6,800 to 8,000 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Bluebunch wheatgrass, needlegrass, bluegrass, mountain big sagebrush

#### **Typical Profile**

*Depth:* 0 to 10 inches

*Texture:* Extremely gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 10 to 34 inches

*Texture:* Extremely gravelly loam, extremely gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 34 to 60 inches

*Texture:* Extremely gravelly sandy loam, extremely gravelly loamy coarse sand

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 4.3 to 5.6 inches

*Water-supplying capacity:* 11 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.10; T value—5; wind erodibility group—8

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Clanalpine Soil**

*Classification:* Typic Argixerolls, loamy-skeletal, mixed

*Positions on landscape:* Concave, east-facing and upper, north-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from rhyolitic and andesitic tuff

*Slope:* 30 to 50 percent

*Elevation:* 6,800 to 8,000 feet

*Average annual precipitation:* About 15 inches

*Average annual air temperature:* About 41 degrees F

*Frost-free season:* About 70 days

*Dominant present vegetation:* Singleleaf pinyon,

mountain big sagebrush, bluebunch wheatgrass, Utah juniper

*Site index for singleleaf pinyon:* 75

#### **Typical Profile**

*Rock fragments on surface:* 5 percent stones and boulders, 40 percent cobbles, 20 percent pebbles

*Depth:* 0 to 10 inches

*Texture:* Extremely cobbly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 10 to 39 inches

*Texture:* Very gravelly clay loam, very cobbly loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Mildly alkaline

*Depth:* 39 inches

*Kind of material:* Weathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 4 to 6 inches

*Water-supplying capacity:* 13 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.10; T value—2; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Softscrabble Soil**

*Classification:* Pachic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Concave, lower, north-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from volcanic rock

*Slope:* 30 to 50 percent

*Elevation:* 6,800 to 8,000 feet

*Average annual precipitation:* About 16 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 70 days

*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

#### **Typical Profile**

*Depth:* 0 to 16 inches

*Texture:* Loam

*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral

*Depth:* 16 to 30 inches  
*Texture:* Very cobbly clay loam

*Structure:* Angular blocky  
*Consistence:* Hard, friable  
*Reaction:* Neutral

*Depth:* 30 to 60 inches  
*Texture:* Very gravelly clay loam

*Structure:* Angular blocky  
*Consistence:* Hard, friable  
*Reaction:* Neutral

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 7 to 9 inches

*Water-supplying capacity:* 14 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.28; T value—5; wind erodibility group—5

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Positions on landscape:* Scattered peaks and cliffs  
*Distinctive present vegetation:* None

#### **Inclusion 2**

*Classification:* Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid  
*Positions on landscape:* Near areas of Rock outcrop on crests of mountains  
*Distinctive present vegetation:* Singleleaf pinyon, mountain big sagebrush, bluegrass

#### **Inclusion 3**

*Classification:* Lithic Argixerolls, loamy-skeletal, mixed, frigid  
*Positions on landscape:* Crests of mountains  
*Distinctive present vegetation:* Low sagebrush, black sagebrush, bluegrass

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Torro Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Clanalpine Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Softscrabble Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Torro Soil**

*Range seeding:* Poor—small stones

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—seepage, small stones, slope

*Shallow excavations:* Severe—cutbanks cave, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

#### **Clanalpine Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Softscrabble Soil**

*Range seeding:* Poor—erodes easily

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Torro and Clanalpine soils—VIIIs, nonirrigated; Softscrabble soil—VIIe, nonirrigated

*Range site:* Torro soil—024X029N; Clanalpine soil—025X061N; Softscrabble soil—028B049N; Inclusion

1—none; Inclusion 2—025X061N; Inclusion 3—028B037N

### **3562—Locane-Coztur-Punchbowl association**

*Positions on landscape:* Mountains

#### **Composition**

*Major components:*

Locane gravelly loam, 8 to 15 percent slopes—35 percent

Coztur gravelly loam, 8 to 15 percent slopes—25 percent

Punchbowl gravelly loam, 15 to 30 percent slopes—25 percent

*Contrasting inclusions:*

Xerollic Haplargids, fine, montmorillonitic, frigid, 4 to 15 percent slopes—8 percent

Robson very cobbly loam, 15 to 30 percent slopes—5 percent

Rock outcrop—2 percent

#### **Characteristics of the Locane Soil**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* Summits, crests, and concave side slopes of mountains

*Parent material:* Residuum derived from shale and conglomerate

*Slope:* 8 to 15 percent

*Elevation:* 6,400 to 7,300 feet

*Average annual precipitation:* About 12 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Indian ricegrass, needlegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 40 percent pebbles

*Depth:* 0 to 6 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 6 to 14 inches

*Texture:* Very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 14 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.5 to 2.5 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

#### **Characteristics of the Coztur Soil**

*Classification:* Lithic Xerollic Haplargids, loamy, mixed, frigid

*Positions on landscape:* Convex, north-facing side slopes of mountains

*Parent material:* Residuum derived from volcanic rock

*Slope:* 8 to 15 percent

*Elevation:* 6,400 to 7,300 feet

*Average annual precipitation:* About 11 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Mountain big sagebrush, Wyoming big sagebrush, needlegrass, bluegrass

#### **Typical Profile**

*Rock fragments on surface:* 10 percent pebbles

*Depth:* 0 to 11 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Depth:* 11 to 17 inches

*Texture:* Loam, clay loam

*Structure:* Subangular blocky

*Consistence:* Hard, friable

*Depth:* 17 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 2.1 to 3.5 inches

*Water-supplying capacity:* 10 inches

*Runoff:* Medium



*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1;  
wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Punchbowl Soil**

*Classification:* Lithic Xerollic Haplargids, loamy, mixed,  
frigid

*Positions on landscape:* Convex, south- and west-facing  
side slopes of mountains

*Parent material:* Residuum derived from andesite,  
dacite, rhyolite, and tuff

*Slope:* 15 to 30 percent

*Elevation:* 6,400 to 7,300 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 90 days

*Dominant present vegetation:* Black sagebrush,  
bluegrass, bottlebrush squirreltail

### **Typical Profile**

*Depth:* 0 to 3 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 3 to 7 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 7 to 11 inches

*Texture:* Gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 11 inches

*Kind of material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 8 to 14 inches

*Depth to a seasonal high water table:* More than 60  
inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.3 to 2.0 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1;  
wind erodibility group—6

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Xerollic Haplargids, fine, montmorillonitic,  
frigid

*Positions on landscape:* Toe slopes of mountains

*Distinctive present vegetation:* Mountain big sagebrush,  
Wyoming big sagebrush, needlegrass

#### **Inclusion 2**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal,  
montmorillonitic, frigid

*Positions on landscape:* Convex, lower, north-facing side  
slopes of mountains

*Distinctive present vegetation:* Low sagebrush, bluegrass

#### **Inclusion 3**

*Positions on landscape:* Scattered peaks

*Distinctive present vegetation:* None

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Locane Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Coztur Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Punchbowl Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Locane Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones

*Daily cover for landfill:* Poor—depth to rock, small  
stones

*Shallow excavations:* Severe—depth to rock

*Local roads and streets:* Severe—depth to rock

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Coztur Soil***Range seeding:* Poor—droughty*Roadfill:* Poor—depth to rock*Topsoil:* Poor—depth to rock, small stones*Daily cover for landfill:* Poor—depth to rock*Shallow excavations:* Severe—depth to rock*Local roads and streets:* Severe—depth to rock*Pond reservoir areas:* Severe—depth to rock, slope*Embankments, dikes, and levees:* Severe—thin layer*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines**Punchbowl Soil***Range seeding:* Poor—droughty*Roadfill:* Poor—depth to rock*Topsoil:* Poor—depth to rock, small stones, slope*Daily cover for landfill:* Poor—depth to rock, small stones, slope*Shallow excavations:* Severe—depth to rock, slope*Local roads and streets:* Severe—depth to rock, slope*Pond reservoir areas:* Severe—depth to rock, slope*Embankments, dikes, and levees:* Severe—thin layer*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines**Interpretive Groups***Land capability classification:* Locane and Coztur soils—VIIIs, nonirrigated; Punchbowl soil—VIIe, nonirrigated*Range site:* Locane soil—024X005N; Coztur soil—025X014N; Punchbowl soil—028B016N; Inclusion 1—025X014N; Inclusion 2—024X018N; Inclusion 3—none**3563—Locane-Muni association***Positions on landscape:* Mountains, fan piedmonts**Composition***Major components:*

Locane gravelly sandy loam, 2 to 8 percent slopes—35 percent

Muni gravelly sandy loam, 2 to 8 percent slopes—30 percent

Locane very gravelly loam, eroded, 4 to 15 percent slopes—20 percent

*Contrasting inclusions:*

Akerue cobbly loam, 2 to 8 percent slopes—8 percent

Durixerollic Camborthids, coarse-loamy, mixed, frigid, 2 to 8 percent slopes—4 percent

Rock outcrop—3 percent

**Characteristics of the Locane Soil***Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid*Positions on landscape:* Concave side slopes of mountains*Parent material:* Residuum derived from shale and conglomerate*Slope:* 2 to 8 percent*Elevation:* 6,300 to 7,000 feet*Average annual precipitation:* About 12 inches*Average annual air temperature:* About 45 degrees F*Frost-free season:* About 80 days*Dominant present vegetation:* Indian ricegrass, needlegrass, Wyoming big sagebrush**Typical Profile***Depth:* 0 to 6 inches*Texture:* Gravelly sandy loam*Structure:* Platy*Consistence:* Slightly hard, very friable*Reaction:* Neutral*Depth:* 6 to 14 inches*Texture:* Very gravelly clay loam*Structure:* Angular blocky*Consistence:* Hard, friable*Reaction:* Neutral*Depth:* 14 inches*Kind of material:* Unweathered bedrock**Soil and Water Features***Depth to bedrock:* 10 to 20 inches*Depth to a seasonal high water table:* More than 60 inches*Frequency of flooding:* None*Permeability:* Slow*Available water capacity:* 1.2 to 2.2 inches*Water-supplying capacity:* 8 inches*Runoff:* Rapid*Hydrologic group:* D*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—5*Hazard of erosion:* By water—slight; by wind—slight*Shrink-swell potential:* Moderate*Corrosivity:* To steel—moderate; to concrete—low*Potential for frost action:* Low**Characteristics of the Muni Soil***Classification:* Haploxerollic Durargids, loamy, mixed, mesic, shallow*Positions on landscape:* Fan piedmont remnants*Parent material:* Mixed alluvium that includes loess and volcanic ash*Slope:* 2 to 8 percent*Elevation:* 6,300 to 7,000 feet*Average annual precipitation:* About 10 inches*Average annual air temperature:* About 45 degrees F*Frost-free season:* About 100 days

*Dominant present vegetation:* Needlegrass, bluegrass,  
Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Gravelly sandy loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 3 to 18 inches

*Texture:* Sandy clay loam, clay loam, loam

*Structure:* Prismatic

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Depth:* 18 to 49 inches

*Kind of material:* Cemented hardpan

*Depth:* 49 to 60 inches

*Texture:* Very gravelly loamy sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Strongly alkaline

### **Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60  
inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 2.0 to 3.5 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.28; T value—1;  
wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Locane Soil, Eroded**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal,  
montmorillonitic, frigid

*Positions on landscape:* Convex, rilled side slopes of  
mountains

*Parent material:* Residuum derived from shale and  
conglomerate

*Slope:* 4 to 15 percent

*Elevation:* 6,300 to 7,000 feet

*Average annual precipitation:* About 12 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Indian ricegrass,

needlegrass, Wyoming big sagebrush, singleleaf  
pinyon

*Site index for common trees:* Utah juniper—22;  
singleleaf pinyon—22

### **Typical Profile**

*Rock fragments on surface:* 40 percent pebbles

*Depth:* 0 to 2 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 2 to 10 inches

*Texture:* Very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 10 inches

*Kind of material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60  
inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.0 to 2.8 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.17; T value—1;  
wind erodibility group—7

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Xerollic Durargids, clayey-skeletal,  
montmorillonitic, frigid, shallow

*Positions on landscape:* Summits of hills

*Distinctive present vegetation:* Black sagebrush

#### **Inclusion 2**

*Classification:* Durixerollic Camborthids, coarse-loamy,  
mixed, frigid

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Inclusion 3**

*Positions on landscape:* Scattered peaks, severely  
eroded areas

*Distinctive present vegetation:* None

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Locane Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Muni Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Locane Soil, Eroded**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses****Locane Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones

*Daily cover for landfill:* Poor—depth to rock, small stones

*Shallow excavations:* Severe—depth to rock

*Local roads and streets:* Severe—depth to rock

*Pond reservoir areas:* Severe—depth to rock

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Muni Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—cemented pan

*Topsoil:* Poor—cemented pan, area reclaim

*Daily cover for landfill:* Poor—cemented pan, small stones

*Shallow excavations:* Severe—cemented pan, cutbanks cave

*Local roads and streets:* Severe—cemented pan

*Pond reservoir areas:* Severe—cemented pan

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Locane Soil, Eroded**

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones

*Daily cover for landfill:* Poor—depth to rock, small stones

*Shallow excavations:* Severe—depth to rock

*Local roads and streets:* Severe—depth to rock

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Locane soils—VIIIs, nonirrigated; Muni soil—IVe, irrigated, and VIIIs, nonirrigated

*Range site:* Locane soil—024X005N; Muni soil—028B010N; Locane soil, eroded—025X062N; Inclusion 1—028B016N; Inclusion 2—024X041N; Inclusion 3—none

**3625—Minat-Coztur-Belate association**

*Positions on landscape:* Mountains

**Composition**

*Major components:*

Minat very gravelly very fine sandy loam, 30 to 50 percent slopes—40 percent

Coztur extremely gravelly loam, 15 to 30 percent slopes—30 percent

Belate very cobbly loam, 15 to 30 percent slopes—15 percent

*Contrasting inclusions:*

Xerollic Haplargids, loamy-skeletal, mixed, frigid, 30 to 50 percent slopes—8 percent

Rock outcrop—5 percent

Welch clay loam, drained, 2 to 8 percent slopes—2 percent

**Characteristics of the Minat Soil**

*Classification:* Xerollic Camborthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Concave, south-facing side slopes of mountains

*Parent material:* Mixed colluvium that includes some volcanic ash

*Slope:* 30 to 50 percent

*Elevation:* 6,300 to 7,000 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 46 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Wyoming big sagebrush, bottlebrush squirreltail, bluebunch wheatgrass

**Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 35 percent pebbles

*Depth:* 0 to 9 inches

*Texture:* Very gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Mildly alkaline

*Depth:* 9 to 27 inches

*Texture:* Very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Depth:* 27 to 60 inches

*Texture:* Very gravelly loam, very gravelly fine sandy loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 5.5 to 6.5 inches

*Water-supplying capacity:* 10 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.10; T value—5; wind erodibility group—5

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Coztur Soil**

*Classification:* Lithic Xerollic Haplargids, loamy, mixed, frigid

*Positions on landscape:* Crests and shoulder slopes of mountains

*Parent material:* Residuum derived from volcanic rock

*Slope:* 15 to 30 percent

*Elevation:* 6,300 to 7,000 feet

*Average annual precipitation:* About 11 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Mountain big sagebrush, Wyoming big sagebrush, needlegrass, bluegrass

### **Typical Profile**

*Rock fragments on surface:* 5 percent cobbles, 60 percent pebbles

*Depth:* 0 to 11 inches

*Texture:* Extremely gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Depth:* 11 to 17 inches

*Texture:* Loam, clay loam

*Structure:* Subangular blocky

*Consistence:* Hard, friable

*Depth:* 17 inches

*Kind of material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.4 to 2.5 inches

*Water-supplying capacity:* 10 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.05; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Belate Soil**

*Classification:* Aridic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Convex, north-facing side slopes of mountains

*Parent material:* Colluvium and residuum derived from tuff and andesite

*Slope:* 15 to 30 percent

*Elevation:* 6,300 to 7,000 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, low sagebrush

### **Typical Profile**

*Rock fragments on surface:* 25 percent cobbles, 20 percent pebbles

*Depth:* 0 to 12 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Neutral

*Depth:* 12 to 60 inches

*Texture:* Very gravelly loam, very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Mildly alkaline

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 6 to 8 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—7

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Xerollic Haplargids, loamy-skeletal, mixed, frigid

*Positions on landscape:* The lower, north-facing side slopes of mountains

*Distinctive present vegetation:* Mountain big sagebrush, serviceberry

#### **Inclusion 2**

*Positions on landscape:* Scattered peaks

*Distinctive present vegetation:* None

#### **Inclusion 3**

*Classification:* Cumulic Haplaquolls, fine-loamy, mixed, frigid

*Positions on landscape:* Intermountain drainageways

*Distinctive present vegetation:* Basin big sagebrush, basin wildrye

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Minat Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Coztur Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Belate Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Minat Soil**

*Range seeding:* Poor—small stones

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Slight

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Coztur Soil**

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Belate Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Minat, Coztur, and Belate soils—VIIIs, nonirrigated

*Range site:* Minat soil—024X005N; Coztur soil—025X014N; Belate soil—024X027N; Inclusion 1—025X014N; Inclusion 2—none; Inclusion 3—028B024N

### **3690—Izod-Koynik-Rock outcrop association**

*Positions on landscape:* Foothills

### **Composition**

*Major components:*

Izod cobbly loam, 15 to 50 percent slopes—40 percent  
Koynik extremely gravelly sandy loam, 15 to 30 percent slopes—30 percent

Rock outcrop—15 percent

*Contrasting inclusions:*

Xeric Torriorthents, loamy, mixed, nonacid, mesic, shallow, 4 to 15 percent slopes—8 percent

Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic, 8 to 15 percent slopes—7 percent

### **Characteristics of the Izod Soil**

*Classification:* Lithic Xeric Torriorthents, loamy-skeletal, carbonatic, mesic

*Positions on landscape:* Convex, east- and north-facing crests, shoulder slopes, and side slopes of foothills

*Parent material:* Residuum and colluvium derived from limestone

*Slope:* 15 to 50 percent

*Elevation:* 5,500 to 6,100 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, bottlebrush squirreltail, black sagebrush

### **Typical Profile**

*Rock fragments on surface:* 20 percent cobbles, 10 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Cobbly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Depth:* 4 to 10 inches

*Texture:* Very gravelly loam, extremely gravelly loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Depth:* 10 inches

*Kind of material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 7 to 14 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 0.5 to 1.5 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Koynik Soil**

*Classification:* Lithic Torriorthents, loamy-skeletal, carbonatic, mesic

*Positions on landscape:* South-facing side slopes of foothills

*Parent material:* Residuum and colluvium derived from limestone

*Slope:* 15 to 30 percent

*Elevation:* 5,500 to 6,100 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bottlebrush squirreltail, needlegrass, bud sagebrush, shadscale, ephedra

### **Typical Profile**

*Rock fragments on surface:* 15 percent cobbles, 50 percent pebbles

*Depth:* 0 to 6 inches

*Texture:* Extremely gravelly sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Depth:* 6 to 8 inches

*Texture:* Very gravelly loam, very gravelly very fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Depth:* 8 inches

*Kind of material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 8 to 14 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 0.5 to 1.3 inches

*Water-supplying capacity:* 6 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Rock Outcrop**

*Positions on landscape:* Ledges, broad bedding planes

*Dominant present vegetation:* None

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Xeric Torriorthents, loamy, mixed, nonacid, mesic, shallow

*Positions on landscape:* Concave inset fans and interhill channels

*Distinctive present vegetation:* Wyoming big sagebrush, spiny hopsage

**Inclusion 2**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Convex, higher crests of foothills

*Distinctive present vegetation:* Black sagebrush, Indian ricegrass, small rabbitbrush

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Izod Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

**Koynik Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

**Suitability and Limitations for Selected Uses****Izod Soil**

*Range seeding:* Poor—droughty, erodes easily, depth to rock

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Koynik Soil**

*Range seeding:* Poor—too arid, droughty, small stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Izod and Koynik soils—

VIIIs, nonirrigated; Rock outcrop—VIIIIs, nonirrigated

*Range site:* Izod soil—024X030N; Koynik soil—

024X025N; Rock outcrop—none; Inclusion 1—

024X005N; Inclusion 2—028B016N

**Composition****Major component:**

Kelk silt loam, saline, 0 to 2 percent slopes—85 percent

**Contrasting inclusions:**

Kelk very fine sandy loam, occasionally flooded, 0 to 2 percent slopes—7 percent

Broyles very fine sandy loam, 0 to 4 percent slopes—5 percent

Durorthidic Torriorthents, coarse-silty, mixed, mesic, 0 to 4 percent slopes—3 percent

**Characteristics of the Kelk Soil**

*Classification:* Durixerollic Camborthids, fine-silty, mixed, mesic

*Positions on landscape:* Inset fan remnants

*Parent material:* Loess that includes volcanic ash, mixed alluvium

*Slope:* 0 to 2 percent

*Elevation:* 5,100 to 5,400 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Basin big sagebrush, basin wildrye, black greasewood

**Typical Profile**

*Depth:* 0 to 3 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 3 to 18 inches

*Texture:* Silt loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 4 to 16 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

*Depth:* 18 to 42 inches

*Texture:* Silt loam

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 4 to 16 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

*Depth:* 42 to 60 inches

*Texture:* Silt loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Strongly alkaline

**3740—Kelk silt loam, saline**

*Positions on landscape:* Inset fans



*Salinity:* 4 to 16 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 9 to 11 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—moderate

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durixerollic Camborthids, fine-silty, mixed, mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Basin big sagebrush, black greasewood, rubber rabbitbrush

#### **Inclusion 2**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Fan skirts

*Distinctive present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

#### **Inclusion 3**

*Classification:* Durorthidic Torriorthents, coarse-silty, mixed, mesic

*Positions on landscape:* Adjacent to channels and drainageways

*Distinctive present vegetation:* Big saltbush, black greasewood, basin wildrye

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

### **Suitability and Limitations for Selected Uses**

*Range seeding:* Poor—excess salt

*Roadfill:* Fair—low strength, shrink-swell

*Topsoil:* Poor—thin layer

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—low strength, frost action, shrink-swell

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Kelk soil—IIs, irrigated; VIs, nonirrigated

*Range site:* Kelk soil—024X022N; Inclusion 1—024X006N; Inclusion 2—024X002N; Inclusion 3—024X015N

## **3741—Kelk-Settlemeier association**

*Positions on landscape:* Inset fans

### **Composition**

*Major components:*

Kelk very fine sandy loam, occasionally flooded, 0 to 2 percent slopes—55 percent

Settlemeier fine sandy loam, drained, 0 to 2 percent slopes—30 percent

*Contrasting inclusions:*

Xerollic Camborthids, fine-loamy, mixed, mesic, 0 to 4 percent slopes—10 percent

Duric Camborthids, fine-loamy, mixed, mesic, 0 to 4 percent slopes—3 percent

Aeric Fluvaquents, loamy-skeletal, mixed, mesic, 0 to 4 percent slopes—2 percent

### **Characteristics of the Kelk Soil**

*Classification:* Durixerollic Camborthids, fine-silty, mixed, mesic

*Positions on landscape:* The lower inset fan remnants

*Parent material:* Loess that includes volcanic ash, mixed alluvium

*Slope:* 0 to 2 percent

*Elevation:* 5,200 to 6,000 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Basin big sagebrush, basin wildrye, rubber rabbitbrush, black greasewood

### **Typical Profile**

*Depth:* 0 to 14 inches

*Texture:* Very fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 14 to 51 inches

*Texture:* Silt loam

*Structure:* Massive

*Consistence:* Hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

*Depth:* 51 to 60 inches

*Texture:* Silt loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Occasional for brief to long periods in February through June

*Permeability:* Slow

*Available water capacity:* 10 to 12 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.49; T value—5; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Settlemyer Soil**

*Classification:* Fluvaquentic Haplaquolls, fine-loamy, mixed, mesic

*Positions on landscape:* Recently dissected upper inset fan remnants

*Parent material:* Mixed alluvium

*Slope:* 0 to 2 percent

*Elevation:* 5,200 to 6,000 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Basin wildrye, basin big sagebrush

#### **Typical Profile**

*Depth:* 0 to 16 inches

*Texture:* Fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Depth:* 16 to 36 inches

*Texture:* Silty clay loam, clay loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Depth:* 36 to 60 inches

*Texture:* Stratified very gravelly loamy sand to silty clay loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Rare

*Permeability:* Moderately slow

*Available water capacity:* 6 to 8 inches

*Water-supplying capacity:* 10 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.28; T value—5; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Xerollic Camborthids, fine-loamy, mixed, mesic

*Positions on landscape:* The higher recent inset fans

*Distinctive present vegetation:* Big saltbrush, black greasewood

##### **Inclusion 2**

*Classification:* Duric Camborthids, fine-loamy, mixed, mesic

*Positions on landscape:* Smooth, lower recent inset fans

*Distinctive present vegetation:* Spiny hopsage, black greasewood, shadscale

##### **Inclusion 3**

*Classification:* Aeris Fluvaquents, loamy-skeletal, mixed, mesic

*Positions on landscape:* Irregularly shaped, broad areas adjacent to channels

*Distinctive present vegetation:* Saltcedar, willow, rose

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Kelk Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Settlemyer Soil***Wild herbaceous plants (nonirrigated):* Fair*Shrubs (nonirrigated):* Fair**Suitability and Limitations for Selected Uses****Kelk Soil***Range seeding:* Fair—too arid*Roadfill:* Poor—low strength*Topsoil:* Good*Daily cover for landfill:* Good*Shallow excavations:* Moderate—flooding*Local roads and streets:* Severe—low strength, flooding*Pond reservoir areas:* Moderate—seepage*Embankments, dikes, and levees:* Severe—piping*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines**Settlemyer Soil***Range seeding:* Fair—too arid*Roadfill:* Good*Topsoil:* Fair—too clayey, small stones, area reclaim*Daily cover for landfill:* Fair—too clayey, too sandy, small stones*Shallow excavations:* Severe—cutbanks cave*Local roads and streets:* Severe—low strength*Pond reservoir areas:* Moderate—seepage*Embankments, dikes, and levees:* Severe—piping*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines**Interpretive Groups***Land capability classification:* Kelk soil—IIw, irrigated, and VIw, nonirrigated; Settlemyer soil—IIc, irrigated, and VIc, nonirrigated*Range site:* Kelk soil—024X006N; Settlemyer soil—028B003N; Inclusion 1—024X015N; Inclusion 2—024X003N; Inclusion 3—028B033N**3742—Kelk-Ocala association***Positions on landscape:* Inset fans, alluvial flats**Composition***Major components:*

Kelk very fine sandy loam, occasionally flooded, 0 to 4 percent slopes—55 percent

Ocala silt loam, occasionally flooded, 0 to 2 percent slopes—30 percent

*Contrasting inclusions:*

Batan silt loam, 0 to 2 percent slopes—5 percent

Aeric Halaquepts, fine-loamy, mixed (calcareous), mesic, 0 to 2 percent slopes—5 percent

Aquic Torriorthents, fine-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—5 percent

**Characteristics of the Kelk Soil***Classification:* Durixerollic Camborthids, fine-silty, mixed, mesic*Positions on landscape:* Broad inset fans dissecting alluvial flats*Parent material:* Loess that includes volcanic ash, mixed alluvium*Slope:* 0 to 2 percent*Elevation:* 5,200 to 5,400 feet*Average annual precipitation:* About 8 inches*Average annual air temperature:* About 48 degrees F*Frost-free season:* About 110 days*Dominant present vegetation:* Basin big sagebrush, basin wildrye, rubber rabbitbrush, black greasewood**Typical Profile***Depth:* 0 to 14 inches*Texture:* Very fine sandy loam*Structure:* Platy*Consistence:* Slightly hard, very friable*Reaction:* Moderately alkaline*Salinity:* 0 to 4 millimhos per centimeter*Sodicity (SAR):* 0 to 5*Depth:* 14 to 51 inches*Texture:* Silt loam*Structure:* Massive*Consistence:* Hard, very friable*Reaction:* Moderately alkaline*Salinity:* 0 to 4 millimhos per centimeter*Sodicity (SAR):* 5 to 13*Depth:* 51 to 60 inches*Texture:* Silt loam*Structure:* Massive*Consistence:* Slightly hard, very friable*Reaction:* Strongly alkaline*Salinity:* 4 to 8 millimhos per centimeter*Sodicity (SAR):* 5 to 13**Soil and Water Features***Depth to a seasonal high water table:* More than 60 inches*Frequency of flooding:* Occasional for brief to long periods in February through June*Permeability:* Slow*Available water capacity:* 10 to 12 inches*Water-supplying capacity:* 8 inches*Runoff:* Slow*Hydrologic group:* C*Erosion factors (upper layer):* K value—0.49; T value—5; wind erodibility group—3*Hazard of erosion:* By water—slight; by wind—severe*Shrink-swell potential:* Moderate*Corrosivity:* To steel—high; to concrete—low*Potential for frost action:* Moderate

### **Characteristics of the Ocala Soil**

**Classification:** Aerlic Halaquepts, fine-silty, mixed (calcareous), mesic

**Positions on landscape:** Dissected alluvial flats

**Parent material:** Mixed silty alluvium that includes volcanic ash

**Slope:** 0 to 2 percent

**Elevation:** 5,200 to 5,400 feet

**Average annual precipitation:** About 7 inches

**Average annual air temperature:** About 49 degrees F

**Frost-free season:** About 120 days

**Dominant present vegetation:** Black greasewood, rubber rabbitbrush, basin wildrye, alkali sacaton

### **Typical Profile**

**Depth:** 0 to 4 inches

**Texture:** Silt loam

**Structure:** Platy

**Consistence:** Slightly hard, friable

**Reaction:** Very strongly alkaline

**Salinity:** 16 to 30 millimhos per centimeter

**Sodicity (SAR):** 30 to 46

**Depth:** 4 to 36 inches

**Texture:** Silt loam, silty clay loam

**Structure:** Massive

**Consistence:** Hard, brittle

**Reaction:** Strongly alkaline

**Salinity:** 16 to 30 millimhos per centimeter

**Sodicity (SAR):** 20 to 35

**Depth:** 36 to 60 inches

**Texture:** Silt loam, silty clay loam

**Structure:** Massive

**Consistence:** Very hard, very firm

**Reaction:** Strongly alkaline

**Salinity:** 8 to 16 millimhos per centimeter

**Sodicity (SAR):** 20 to 35

### **Soil and Water Features**

**Depth to a seasonal high water table:** 42 to 60 inches

**Frequency of flooding:** Occasional for brief to long periods in February through May

**Permeability:** Slow

**Available water capacity:** 10 to 12 inches

**Water-supplying capacity:** 7 inches

**Runoff:** Very slow

**Hydrologic group:** C

**Erosion factors (upper layer):** K value—0.43; T value—5; wind erodibility group—4L

**Hazard of erosion:** By water—slight; by wind—severe

**Shrink-swell potential:** Moderate

**Corrosivity:** To steel—high; to concrete—high

**Potential for frost action:** High

### **Contrasting Inclusions**

#### **Inclusion 1**

**Classification:** Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic

**Positions on landscape:** Alluvial flat remnants

**Distinctive present vegetation:** Black greasewood, shadscale

#### **Inclusion 2**

**Classification:** Aerlic Halaquepts, fine-loamy, mixed (calcareous), mesic

**Positions on landscape:** Ponded areas on alluvial flats

**Distinctive present vegetation:** Black greasewood, basin wildrye, inland saltgrass, Nuttall saltbush

#### **Inclusion 3**

**Classification:** Aquic Torriorthents, fine-silty, mixed (calcareous), mesic

**Positions on landscape:** Overwashed areas of alluvial flats

**Distinctive present vegetation:** Basin big sagebrush, basin wildrye

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Kelk Soil**

**Wild herbaceous plants (nonirrigated):** Fair

**Shrubs (nonirrigated):** Fair

#### **Ocala Soil**

**Wild herbaceous plants (nonirrigated):** Very poor

**Shrubs (nonirrigated):** Very poor

### **Suitability and Limitations for Selected Uses**

#### **Kelk Soil**

**Range seeding:** Fair—too arid

**Roadfill:** Poor—low strength

**Topsoil:** Good

**Daily cover for landfill:** Good

**Shallow excavations:** Moderate—flooding

**Local roads and streets:** Severe—low strength, flooding

**Pond reservoir areas:** Moderate—seepage

**Embankments, dikes, and levees:** Severe—piping

**Sand:** Improbable source—excess fines

**Gravel:** Improbable source—excess fines

#### **Ocala Soil**

**Range seeding:** Poor—excess salt, excess sodium

**Roadfill:** Poor—low strength

**Topsoil:** Poor—excess salt, excess sodium

**Daily cover for landfill:** Poor—excess salt, excess sodium

**Shallow excavations:** Moderate—wetness, flooding

**Local roads and streets:** Severe—low strength, flooding, frost action

*Pond reservoir areas:* Slight

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Kelk soil—IIw, irrigated, and VIw, nonirrigated; Ocala soil—VIIw, nonirrigated

*Range site:* Kelk soil—024X006N; Ocala soil—024X007N; Inclusion 1—024X003N; Inclusion 2—024X011N; Inclusion 3—028B003N

## **3840—Jung-Newpass association**

*Positions on landscape:* Mountains

### **Composition**

*Major components:*

Jung very cobbly loam, 15 to 30 percent slopes—45 percent

Newpass very gravelly fine sandy loam, 15 to 30 percent slopes—25 percent

Jung very cobbly fine sandy loam, 8 to 15 percent slopes—15 percent

*Contrasting inclusions:*

Haplic Durargids, clayey-skeletal, montmorillonitic, mesic, 8 to 30 percent slopes—7 percent

Durixerollic Haplargids, loamy-skeletal, mixed, mesic, 4 to 15 percent slopes—6 percent

Rock outcrop—2 percent

### **Characteristics of the Jung Soil, Moderately Steep**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic

*Positions on landscape:* Convex side slopes of mountains

*Parent material:* Residuum derived from volcanic and metavolcanic rock

*Slope:* 15 to 30 percent

*Elevation:* 5,500 to 7,000 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, Indian ricegrass, black sagebrush, small rabbitbrush

### **Typical Profile**

*Rock fragments on surface:* 40 percent pebbles

*Depth:* 0 to 8 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 8 to 19 inches

*Texture:* Very cobbly clay

*Structure:* Prismatic

*Consistence:* Very hard, firm

*Reaction:* Moderately alkaline

*Depth:* 19 inches

*Kind of material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.4 to 2.5 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Newpass Soil**

*Classification:* Haploxerollic Nadurargids, fine, montmorillonitic, mesic

*Positions on landscape:* Concave side slopes of mountains

*Parent material:* Residuum derived from volcanic and metavolcanic rock

*Slope:* 15 to 30 percent

*Elevation:* 5,500 to 7,000 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, Thurber needlegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 75 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Very gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 4 to 14 inches

*Texture:* Clay

*Structure:* Prismatic

*Consistence:* Hard, firm  
*Reaction:* Moderately alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 13 to 25  
*Depth:* 14 to 24 inches  
*Texture:* Very cobbly silty clay, very gravelly clay, gravelly clay  
*Structure:* Subangular blocky  
*Consistence:* Hard, firm  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 5 to 13  
*Depth:* 24 to 26 inches  
*Texture:* Cemented hardpan

*Depth:* 26 inches  
*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to the hardpan:* 20 to 29 inches  
*Depth to bedrock:* 21 to 36 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 2.4 to 3.5 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Medium  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.15; T value—2; wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* High  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Characteristics of the Jung Soil, Strongly Sloping**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic  
*Positions on landscape:* Convex, south-facing shoulder slopes and upper back slopes of mountains  
*Parent material:* Residuum derived from volcanic and metavolcanic rock  
*Slope:* 8 to 15 percent  
*Elevation:* 5,500 to 7,000 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bluegrass, Indian ricegrass, black sagebrush, small rabbitbrush

#### **Typical Profile**

*Rock fragments on surface:* 20 percent cobbles, 20 percent pebbles

*Depth:* 0 to 8 inches  
*Texture:* Very cobbly fine sandy loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Neutral  
*Depth:* 8 to 19 inches  
*Texture:* Very cobbly clay  
*Structure:* Prismatic  
*Consistence:* Very hard, firm  
*Reaction:* Moderately alkaline  
*Depth:* 19 inches  
*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 1.4 to 2.5 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.15; T value—1; wind erodibility group—8  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Haplic Durargids, clayey-skeletal, montmorillonitic, mesic  
*Positions on landscape:* Side slopes of mountains  
*Distinctive present vegetation:* Shadscale, small rabbitbrush

##### **Inclusion 2**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Inset fans, colluvial fans  
*Distinctive present vegetation:* Wyoming big sagebrush, spiny hopsage, pine bluegrass

##### **Inclusion 3**

*Positions on landscape:* Rimrock  
*Distinctive present vegetation:* None

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Jung Soil, Moderately Steep**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

**Newpass Soil***Wild herbaceous plants (nonirrigated):* Very poor*Shrubs (nonirrigated):* Very poor**Jung Soil, Strongly Sloping***Wild herbaceous plants (nonirrigated):* Fair*Shrubs (nonirrigated):* Fair**Suitability and Limitations for Selected Uses****Jung Soil, Moderately Steep***Range seeding:* Poor—large stones, droughty*Roadfill:* Poor—depth to rock*Topsoil:* Poor—depth to rock, small stones, too clayey*Daily cover for landfill:* Poor—depth to rock, small stones, slope*Shallow excavations:* Severe—depth to rock, slope*Local roads and streets:* Severe—depth to rock, slope*Pond reservoir areas:* Severe—depth to rock, slope*Embankments, dikes, and levees:* Severe—thin layer, large stones*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines**Newpass Soil***Range seeding:* Poor—rooting depth, small stones, excess sodium*Roadfill:* Poor—depth to rock, shrink-swell, low strength*Topsoil:* Poor—too clayey, small stones, excess sodium*Daily cover for landfill:* Poor—depth to rock, hard to pack, large stones*Shallow excavations:* Severe—depth to rock, slope*Local roads and streets:* Severe—shrink-swell, low strength, slope*Pond reservoir areas:* Severe—slope*Embankments, dikes, and levees:* Severe—excess sodium*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines**Jung Soil, Strongly Sloping***Range seeding:* Poor—large stones, droughty*Roadfill:* Poor—depth to rock*Topsoil:* Poor—depth to rock, small stones, too clayey*Daily cover for landfill:* Poor—depth to rock, small stones, slope*Shallow excavations:* Severe—depth to rock, slope*Local roads and streets:* Severe—depth to rock, slope*Pond reservoir areas:* Severe—depth to rock, slope*Embankments, dikes, and levees:* Severe—thin layer, large stones*Sand:* Improbable source—excess fines*Gravel:* Improbable source—excess fines**Interpretive Groups***Land capability classification:* Jung and Newpass soils—VIs, nonirrigated*Range site:* Jung soils—027X032N; Newpass soil—027X008N; Inclusion 1—024X002N; Inclusion 2—027X008N; Inclusion 3—none**3841—Jung-Itca-Roca association***Positions on landscape:* Mountains**Composition***Major components:*

Jung very cobbly loam, 15 to 30 percent slopes—35 percent

Itca very cobbly loam, 15 to 30 percent slopes—25 percent

Roca very cobbly loam, 30 to 50 percent slopes—25 percent

*Contrasting inclusions:*

Lithic Xerollic Haplargids, clayey-skeletal, mixed, mesic, 15 to 30 percent slopes—9 percent

Durixerollic Haplargids, fine-loamy, mixed, mesic, 4 to 15 percent slopes—3 percent

Rock outcrop—3 percent

**Characteristics of the Jung Soil***Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic*Positions on landscape:* Convex, south- and west-facing lower side slopes of mountains*Parent material:* Residuum derived from volcanic and metavolcanic rock*Slope:* 15 to 30 percent*Elevation:* 6,000 to 7,000 feet*Average annual precipitation:* About 9 inches*Average annual air temperature:* About 48 degrees F*Frost-free season:* About 110 days*Dominant present vegetation:* Bluegrass, Indian ricegrass, black sagebrush, small rabbitbrush**Typical Profile***Rock fragments on surface:* 20 percent cobbles, 20 percent pebbles*Depth:* 0 to 8 inches*Texture:* Very cobbly loam*Structure:* Platy*Consistence:* Soft, very friable*Reaction:* Neutral*Depth:* 8 to 19 inches*Texture:* Very cobbly clay*Structure:* Prismatic*Consistence:* Very hard, firm*Reaction:* Moderately alkaline*Depth:* 19 inches*Kind of material:* Unweathered bedrock

### Soil and Water Features

*Depth to bedrock:* 14 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 1.4 to 2.5 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.15; T value—1; wind erodibility group—9  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

### Characteristics of the Itca Soil

*Classification:* Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid  
*Positions on landscape:* North- and east-facing side slopes of mountains  
*Parent material:* Residuum derived from extrusive volcanic and pyroclastic rock  
*Slope:* 15 to 30 percent  
*Elevation:* 6,000 to 7,200 feet  
*Average annual precipitation:* About 14 inches  
*Average annual air temperature:* About 43 degrees F  
*Frost-free season:* About 80 days  
*Dominant present vegetation:* Idaho fescue, bluegrass, singleleaf pinyon, Utah juniper, mountain big sagebrush  
*Site index for singleleaf pinyon:* 70

### Typical Profile

*Rock fragments on surface:* 20 percent cobbles, 20 percent pebbles  
*Depth:* 0 to 9 inches  
*Texture:* Very cobbly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral

*Depth:* 9 to 17 inches  
*Texture:* Very cobbly clay, very gravelly clay loam  
*Structure:* Prismatic  
*Consistence:* Hard, firm  
*Reaction:* Mildly alkaline  
*Depth:* 17 inches  
*Kind of material:* Unweathered bedrock

### Soil and Water Features

*Depth to bedrock:* 10 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 1.2 to 2.5 inches  
*Water-supplying capacity:* 10 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.10; T value—1; wind erodibility group—8  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

### Characteristics of the Roca Soil

*Classification:* Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid  
*Positions on landscape:* The upper, south-facing side slopes of mountains  
*Parent material:* Residuum derived from shale and chert  
*Slope:* 30 to 50 percent  
*Elevation:* 6,500 to 7,200 feet  
*Average annual precipitation:* About 10 inches  
*Average annual air temperature:* About 45 degrees F  
*Frost-free season:* About 100 days  
*Dominant present vegetation:* Bluegrass, bluebunch wheatgrass, big sagebrush

### Typical Profile

*Rock fragments on surface:* 30 percent cobbles, 20 percent pebbles  
*Depth:* 0 to 5 inches  
*Texture:* Very cobbly loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 5 to 27 inches  
*Texture:* Very gravelly clay loam, very gravelly clay  
*Structure:* Angular blocky  
*Consistence:* Hard, firm  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 27 inches  
*Kind of material:* Unweathered bedrock

### Soil and Water Features

*Depth to bedrock:* 20 to 40 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Very slow  
*Available water capacity:* 2.5 to 4.5 inches  
*Water-supplying capacity:* 11 inches  
*Runoff:* Rapid



*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—2;  
wind erodibility group—8

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, mixed, mesic

*Positions on landscape:* The lower side slopes of mountains

*Distinctive present vegetation:* Mountain big sagebrush, Wyoming big sagebrush, bluegrass

#### **Inclusion 2**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* Concave toe slopes of mountains

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Inclusion 3**

*Positions on landscape:* Rimrock, scattered peaks

*Distinctive present vegetation:* None

### **Major Uses**

*Current uses:* Livestock grazing, wildlife habitat

*Potential foreseeable use:* Cordwood production

### **Suitability for Wildlife Habitat Elements**

#### **Jung Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Itca Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Roca Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Jung Soil**

*Range seeding:* Poor—large stones, droughty

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, too clayey

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones, thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Itca Soil**

*Range seeding:* Poor—droughty, large stones

*Roadfill:* Poor—depth to rock, large stones

*Topsoil:* Poor—depth to rock, small stones, too clayey

*Daily cover for landfill:* Poor—depth to rock, too clayey, small stones

*Shallow excavations:* Severe—depth to rock, large stones, slope

*Local roads and streets:* Severe—depth to rock, large stones, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

#### **Roca Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Jung, Itca, and Roca soils—VIIs, nonirrigated

*Range site:* Jung soil—028B016N; Itca soil—025X061N;

Roca soil—024X028N; Inclusion 1—025X014N;

Inclusion 2—027X007N; Inclusion 3—none

### **3842—Jung-Hooplite association**

*Positions on landscape:* Foothills

### **Composition**

*Major components:*

Jung very gravelly loam, 15 to 30 percent slopes—50 percent

Hooplite very gravelly loam, 15 to 30 percent slopes—35 percent

*Contrasting inclusions:*

Xerollic Haplargids, loamy-skeletal, mixed, mesic, 8 to 15 percent slopes—8 percent

Rock outcrop—5 percent

Typic Haplargids, clayey-skeletal, montmorillonitic, mesic, 8 to 15 percent slopes—2 percent

**Characteristics of the Jung Soil**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic

*Positions on landscape:* Convex crests and south-facing slopes of foothills

*Parent material:* Residuum derived from volcanic and metavolcanic rock

*Slope:* 15 to 30 percent

*Elevation:* 5,900 to 6,600 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, Indian ricegrass, black sagebrush, small rabbitbrush

**Typical Profile**

*Rock fragments on surface:* 40 percent pebbles

*Depth:* 0 to 8 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 8 to 19 inches

*Texture:* Very cobbly clay

*Structure:* Prismatic

*Consistence:* Very hard, firm

*Reaction:* Moderately alkaline

*Depth:* 19 inches

*Kind of material:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.4 to 2.5 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—7

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

**Characteristics of the Hooplite Soil**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* North-facing side slopes of foothills

*Parent material:* Residuum derived from rhyolitic rock

*Slope:* 15 to 30 percent

*Elevation:* 5,900 to 6,600 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bottlebrush squirreltail, black sagebrush

**Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 45 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, firm

*Reaction:* Mildly alkaline

*Depth:* 4 to 8 inches

*Texture:* Very gravelly loam, very gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Depth:* 8 inches

*Kind of material:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 6 to 14 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 0.5 to 1.5 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

**Contrasting Inclusions****Inclusion 1**

*Classification:* Xerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Convex toe slopes of foothills

*Distinctive present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

**Inclusion 2**

*Positions on landscape:* Scattered peaks

*Distinctive present vegetation:* None

**Inclusion 3**

*Classification:* Typic Haplargids, clayey-skeletal, montmorillonitic, mesic

*Positions on landscape:* Fan piedmont remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Jung Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Hooplite Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

### **Suitability and Limitations for Selected Uses**

#### **Jung Soil**

*Range seeding:* Poor—small stones, droughty

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, too clayey

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Hooplite Soil**

*Range seeding:* Poor—droughty, small stones, depth to rock

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Jung and Hooplite soils—VIIIs, nonirrigated

*Range site:* Jung and Hooplite soils—028B016N;

Inclusion 1—024X002N; Inclusion 2—none;

Inclusion 3—024X002N

## **3843—Jung-Newpass-Teguro association**

*Positions on landscape:* Mountains

### **Composition**

*Major components:*

Jung very cobbly loam, 15 to 30 percent slopes—40 percent

Newpass very gravelly fine sandy loam, 15 to 50 percent slopes—25 percent

Teguro very gravelly loam, 30 to 50 percent slopes—20 percent

*Contrasting inclusions:*

Itca very cobbly loam, 15 to 50 percent slopes—7 percent

Rock outcrop—5 percent

Lithic Xeric Torriorthents, loamy-skeletal, mixed, mesic, 30 to 50 percent slopes—3 percent

### **Characteristics of the Jung Soil**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic

*Positions on landscape:* Convex, south-facing and lower, east-facing side slopes of mountains

*Parent material:* Residuum derived from volcanic and metavolcanic rock

*Slope:* 15 to 30 percent

*Elevation:* 6,300 to 7,000 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, Indian ricegrass, black sagebrush, small rabbitbrush

### **Typical Profile**

*Rock fragments on surface:* 25 percent cobbles, 20 percent pebbles

*Depth:* 0 to 8 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 8 to 19 inches

*Texture:* Very cobbly clay

*Structure:* Prismatic

*Consistence:* Very hard, firm

*Reaction:* Moderately alkaline

*Depth:* 19 inches

*Kind of material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.4 to 2.5 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

### **Characteristics of the Newpass Soil**

*Classification:* Haploxerollic Nadurargids, fine, montmorillonitic, mesic  
*Positions on landscape:* The lower, north-facing and higher, east-facing side slopes of mountains  
*Parent material:* Residuum derived from volcanic and metavolcanic rock  
*Slope:* 15 to 50 percent  
*Elevation:* 6,300 to 7,000 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bluegrass, Thurber needlegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 3 percent stones and boulders, 75 percent pebbles  
*Depth:* 0 to 4 inches  
*Texture:* Very gravelly fine sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5  
*Depth:* 4 to 14 inches  
*Texture:* Clay  
*Structure:* Prismatic  
*Consistence:* Hard, firm  
*Reaction:* Moderately alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 13 to 25  
*Depth:* 14 to 24 inches  
*Texture:* Very cobbly silty clay, very gravelly clay, gravelly clay  
*Structure:* Subangular blocky  
*Consistence:* Hard, firm  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 5 to 13  
*Depth:* 24 to 26 inches  
*Kind of material:* Cemented hardpan  
*Depth:* 26 inches  
*Kind of material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to the hardpan:* 20 to 29 inches  
*Depth to bedrock:* 21 to 36 inches

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 2.6 to 3.2 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Medium  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.15; T value—2; wind erodibility group—5  
*Hazard of erosion:* By water—moderate; by wind—slight  
*Shrink-swell potential:* High  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

### **Characteristics of the Teguro Soil**

*Classification:* Lithic Argixerolls, loamy, mixed, frigid  
*Positions on landscape:* The higher, north-facing, convex side slopes of mountains  
*Parent material:* Residuum derived from tuff  
*Slope:* 30 to 50 percent  
*Elevation:* 7,000 to 8,000 feet  
*Average annual precipitation:* About 12 inches  
*Average annual air temperature:* About 45 degrees F  
*Frost-free season:* About 80 days  
*Dominant present vegetation:* Bluegrass, needlegrass, mountain big sagebrush, singleleaf pinyon, Utah juniper  
*Site index for common trees:* Singleleaf pinyon—30; Utah juniper—30

### **Typical Profile**

*Rock fragments on surface:* 20 percent stones and boulders, 55 percent pebbles  
*Depth:* 0 to 6 inches  
*Texture:* Very gravelly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral  
*Depth:* 6 to 16 inches  
*Texture:* Gravelly loam, gravelly clay loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Neutral  
*Depth:* 16 inches  
*Kind of material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow

*Available water capacity:* 1.9 to 2.4 inches

*Water-supplying capacity:* 10 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—1; wind erodibility group—7

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* High-lying, north-facing side slopes of mountains

*Distinctive present vegetation:* Mountain big sagebrush, singleleaf pinyon, Utah juniper, bluegrass

#### **Inclusion 2**

*Positions on landscape:* Rimrock

*Distinctive present vegetation:* None

#### **Inclusion 3**

*Classification:* Lithic Xeric Torriorthents, loamy-skeletal, mixed, mesic

*Positions on landscape:* Eroded, south-facing side slopes of mountains

*Distinctive present vegetation:* Wyoming big sagebrush, small rabbitbrush, bluegrass

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Jung Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Newpass Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

#### **Teguro Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Jung Soil**

*Range seeding:* Poor—stones, droughty

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, too clayey

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones, thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Newpass Soil**

*Range seeding:* Poor—rooting depth, large stones, excess sodium

*Roadfill:* Poor—depth to rock, shrink-swell, low strength

*Topsoil:* Poor—too clayey, small stones, excess sodium

*Daily cover for landfill:* Poor—depth to rock, hard to pack, large stones

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—shrink-swell, low strength, slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Teguro Soil**

*Range seeding:* Poor—small stones, droughty

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Jung, Newpass, and Teguro soils—VIIs, nonirrigated

*Range site:* Jung soil—027X032N; Newpass soil—027X008N; Teguro soil—025X062N; Inclusion 1—025X061N; Inclusion 2—none; Inclusion 3—024X054N

### **3845—Jung-Stingdorn-Atlow association**

*Positions on landscape:* Foothills

### **Composition**

*Major components:*

Jung very gravelly loam, 8 to 15 percent slopes—30 percent

Stingdorn extremely cobbly loam, 30 to 50 percent slopes—30 percent

Atlow very gravelly loam, 30 to 50 percent slopes—25 percent

*Contrasting inclusions:*

Xerollic Haplargids, loamy-skeletal, mixed, mesic, 15 to 30 percent slopes—5 percent  
 Haplic Nadurargids, clayey-skeletal, montmorillonitic, mesic, shallow, 4 to 30 percent slopes—4 percent  
 Rock outcrop—3 percent  
 Rubble land—3 percent

**Characteristics of the Jung Soil**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic  
*Positions on landscape:* Shoulder slopes and summits of foothills  
*Parent material:* Residuum derived from volcanic and metavolcanic rock  
*Slope:* 8 to 15 percent  
*Elevation:* 5,100 to 6,100 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bluegrass, Indian ricegrass, black sagebrush, small rabbitbrush

**Typical Profile**

*Rock fragments on surface:* 40 percent pebbles  
*Depth:* 0 to 8 inches  
*Texture:* Very gravelly loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Neutral  
*Depth:* 8 to 19 inches  
*Texture:* Very cobbly clay  
*Structure:* Prismatic  
*Consistence:* Very hard, firm  
*Reaction:* Moderately alkaline  
*Depth:* 19 inches  
*Kind of material:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 1.9 to 2.5 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—7  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

**Characteristics of the Stingdorn Soil**

*Classification:* Typic Durargids, loamy-skeletal, mixed, mesic, shallow  
*Positions on landscape:* Slightly concave, south- and west-facing side slopes of foothills below areas of Rock outcrop  
*Parent material:* Residuum derived from rhyolite, tuff, and andesite  
*Slope:* 30 to 50 percent  
*Elevation:* 5,100 to 6,100 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bottlebrush squirreltail, shadscale, bud sagebrush

**Typical Profile**

*Rock fragments on surface:* 40 percent cobbles, 30 percent pebbles  
*Depth:* 0 to 7 inches  
*Texture:* Extremely cobbly loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Moderately alkaline  
*Depth:* 7 to 15 inches  
*Texture:* Very cobbly clay loam  
*Structure:* Angular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Depth:* 15 to 20 inches  
*Kind of material:* Indurated hardpan  
*Depth:* 20 inches  
*Kind of material:* Unweathered bedrock

**Soil and Water Features**

*Depth to the hardpan:* 8 to 20 inches  
*Depth to bedrock:* 8 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 1.3 to 2.0 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.10; T value—1; wind erodibility group—8  
*Hazard of erosion:* By water—severe; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

### **Characteristics of the Atlow Soil**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Concave, north-facing side slopes of foothills

*Parent material:* Residuum derived from chert, argillite, shale, and altered tuff

*Slope:* 30 to 50 percent

*Elevation:* 5,800 to 6,200 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 46 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Black sagebrush, bluegrass, Indian ricegrass

#### **Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 40 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 3 to 14 inches

*Texture:* Very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 14 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.1 to 1.8 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—7

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Xerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Concave, east-facing, lower side slopes of foothills

*Distinctive present vegetation:* Wyoming big sagebrush

##### **Inclusion 2**

*Classification:* Haplic Nadurargids, clayey-skeletal, montmorillonitic, mesic, shallow

*Positions on landscape:* Convex, lower side slopes of foothills

*Distinctive present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

##### **Inclusion 3**

*Positions on landscape:* Scattered peaks and rimrock

*Distinctive present vegetation:* None

##### **Inclusion 4**

*Positions on landscape:* Rock stripes below areas of Rock outcrop

*Distinctive present vegetation:* None

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Jung Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

##### **Stingdorn Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

##### **Atlow Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

##### **Jung Soil**

*Range seeding:* Poor—small stones, droughty

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, too clayey

*Daily cover for landfill:* Poor—depth to rock, small stones

*Shallow excavations:* Severe—depth to rock

*Local roads and streets:* Severe—depth to rock

*Pond reservoir areas:* Severe—depth to rock

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

##### **Stingdorn Soil**

*Range seeding:* Poor—too arid, droughty, large stones

*Roadfill:* Poor—depth to rock, large stones, slope

*Topsoil:* Poor—depth to rock, cemented pan, large stones

*Daily cover for landfill:* Poor—depth to rock, large stones, slope

*Shallow excavations:* Severe—depth to rock, cemented pan, large stones

*Local roads and streets:* Severe—depth to rock, slope, large stones

*Pond reservoir areas:* Severe—depth to rock, cemented pan, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Atlow Soil**

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Jung, Stingdorn, and Atlow soils—VIIIs, nonirrigated

*Range site:* Jung and Atlow soils—024X030N; Stingdorn soil—024X002N; Inclusion 1—024X005N; Inclusion 2—024X002N; Inclusions 3 and 4—none

### **3846—Jung-Atlow-McVegas association**

*Positions on landscape:* Foothills

#### **Composition**

*Major components:*

Jung very cobbly loam, 15 to 30 percent slopes—40 percent

Atlow very gravelly loam, 15 to 50 percent slopes—25 percent

McVegas very gravelly loam, 15 to 30 percent slopes—20 percent

*Contrasting inclusions:*

Rock outcrop—7 percent

Durixerollic Haplargids, loamy-skeletal, mixed, mesic, 8 to 15 percent slopes—5 percent

Jung very cobbly fine sandy loam, 4 to 15 percent slopes—3 percent

#### **Characteristics of the Jung Soil**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic

*Positions on landscape:* Convex, broad side slopes of foothills

*Parent material:* Residuum derived from volcanic and metavolcanic rock

*Slope:* 15 to 30 percent

*Elevation:* 6,100 to 6,700 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, Indian ricegrass, black sagebrush, small rabbitbrush

#### **Typical Profile**

*Rock fragments on surface:* 40 percent pebbles

*Depth:* 0 to 8 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 8 to 19 inches

*Texture:* Very cobbly clay

*Structure:* Prismatic

*Consistence:* Very hard, firm

*Reaction:* Moderately alkaline

*Depth:* 19 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.9 to 2.5 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

#### **Characteristics of the Atlow Soil**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* North-facing side slopes of foothills

*Parent material:* Residuum derived from chert, argillite, and altered rhyolitic tuff

*Slope:* 15 to 50 percent

*Elevation:* 6,100 to 6,700 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 46 degrees F



*Frost-free season:* About 110 days

*Dominant present vegetation:* Black sagebrush,  
bluegrass, Indian ricegrass

### **Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 40 percent pebbles

*Depth:* 0 to 6 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 6 to 15 inches

*Texture:* Very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 15 inches

*Kind of material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.1 to 1.3 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—7

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the McVegas Soil**

*Classification:* Haplic Nadurargids, clayey-skeletal, montmorillonitic, mesic, shallow

*Positions on landscape:* South-facing side slopes of foothills

*Parent material:* Residuum derived from volcanic and metavolcanic rock

*Slope:* 15 to 30 percent

*Elevation:* 6,100 to 6,700 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Bottlebrush squirreltail, shadscale, bud sagebrush

### **Typical Profile**

*Rock fragments on surface:* 5 percent cobbles, 50 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

*Depth:* 5 to 19 inches

*Texture:* Very cobbly clay

*Structure:* Prismatic

*Consistence:* Very hard, very firm

*Reaction:* Strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 15 to 30

*Depth:* 19 to 22 inches

*Kind of material:* Cemented hardpan

*Depth:* 22 inches

*Kind of material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches

*Depth to bedrock:* 15 to 23 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.4 to 3.0 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.20; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Positions on landscape:* Scattered peaks

*Distinctive present vegetation:* None

#### **Inclusion 2**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Concave toe slopes of foothills

*Distinctive present vegetation:* Wyoming big sagebrush, bluegrass

**Inclusion 3**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic

*Positions on landscape:* Crests and shoulder slopes of foothills

*Distinctive present vegetation:* Black sagebrush, snakeweed, bluegrass

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Jung Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Atlow Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**McVegas Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

**Suitability and Limitations for Selected Uses****Jung Soil**

*Range seeding:* Poor—large stones, droughty

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, too clayey

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones, thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Atlow Soil**

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**McVegas Soil**

*Range seeding:* Poor—too arid, small stones, droughty

*Roadfill:* Poor—depth to rock, low strength

*Topsoil:* Poor—depth to rock, cemented pan, too clayey

*Daily cover for landfill:* Poor—depth to rock, hard to pack, large stones

*Shallow excavations:* Severe—depth to rock, cemented pan, slope

*Local roads and streets:* Severe—depth to rock, low strength, slope

*Pond reservoir areas:* Severe—depth to rock, cemented pan, slope

*Embankments, dikes, and levees:* Severe—excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Jung, Atlow, and McVegas soils—Vlls, nonirrigated

*Range site:* Jung soil—028B016N; Atlow soil—024X030N; McVegas soil—028B017N; Inclusion 1—none; Inclusion 2—024X005N; Inclusion 3—027X032N

**3847—Jung-Old Camp-Clan Alpine association**

*Positions on landscape:* Mountains

**Composition**

*Major components:*

Jung very gravelly loam, 30 to 50 percent slopes—35 percent

Old Camp very cobbly loam, 30 to 50 percent slopes—30 percent

Clan Alpine very gravelly loam, 30 to 50 percent slopes—20 percent

*Contrasting inclusions:*

Rock outcrop—6 percent

Colbar cobbly loam, 30 to 50 percent slopes—5 percent

McVegas stony loam, 15 to 30 percent slopes—4 percent

**Characteristics of the Jung Soil**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic

*Positions on landscape:* Convex, south-facing side slopes of mountains

*Parent material:* Residuum derived from volcanic and metavolcanic rock

*Slope:* 30 to 50 percent

*Elevation:* 6,300 to 6,700 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, Indian ricegrass, black sagebrush, small rabbitbrush

**Typical Profile**

*Rock fragments on surface:* 40 percent pebbles

*Depth:* 0 to 8 inches  
*Texture:* Very gravelly loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Neutral

*Depth:* 8 to 19 inches  
*Texture:* Very cobbly clay  
*Structure:* Prismatic  
*Consistence:* Very hard, firm  
*Reaction:* Moderately alkaline  
*Depth:* 19 inches  
*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 1.9 to 2.5 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—7  
*Hazard of erosion:* By water—severe; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

#### **Characteristics of the Old Camp Soil**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Convex, lower side slopes of mountains  
*Parent material:* Residuum derived from basalt and andesite  
*Slope:* 30 to 50 percent  
*Elevation:* 6,300 to 6,700 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bluegrass, Thurber needlegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 20 percent pebbles  
*Depth:* 0 to 2 inches  
*Texture:* Very cobbly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Depth:* 2 to 14 inches

*Texture:* Very gravelly loam, very cobbly clay loam  
*Structure:* Angular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Mildly alkaline

*Depth:* 14 inches  
*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 0.9 to 1.2 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—8  
*Hazard of erosion:* By water—severe; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Characteristics of the Clanalpine Soil**

*Classification:* Typic Argixerolls, loamy-skeletal, mixed, frigid  
*Positions on landscape:* Slightly concave, north-facing side slopes of mountains  
*Parent material:* Colluvium and residuum derived from rhyolite and andesitic tuff  
*Slope:* 30 to 50 percent  
*Elevation:* 6,300 to 6,700 feet  
*Average annual precipitation:* About 15 inches  
*Average annual air temperature:* About 41 degrees F  
*Frost-free season:* About 70 days  
*Dominant present vegetation:* Singleleaf pinyon, mountain big sagebrush, bluebunch wheatgrass, Utah juniper  
*Site index for singleleaf pinyon:* 75

#### **Typical Profile**

*Rock fragments on surface:* 5 percent stones and boulders, 10 percent cobbles, 35 percent pebbles  
*Depth:* 0 to 10 inches  
*Texture:* Very gravelly loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral  
*Depth:* 10 to 39 inches  
*Texture:* Very gravelly clay loam, very cobbly loam  
*Structure:* Angular blocky  
*Consistence:* Hard, friable  
*Reaction:* Mildly alkaline

*Depth:* 39 inches

*Kind of material:* Weathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 3 to 6 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.17; T value—2; wind erodibility group—7

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Positions on landscape:* Scattered peaks

*Distinctive present vegetation:* None

#### **Inclusion 2**

*Classification:* Xerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* Concave, south-facing side slopes of mountains

*Distinctive present vegetation:* Wyoming big sagebrush, needlegrass, bluegrass

#### **Inclusion 3**

*Classification:* Haplic Nadurargids, clayey-skeletal, montmorillonitic, mesic, shallow

*Positions on landscape:* Convex, south-facing intermediate side slopes of mountains

*Distinctive present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Jung Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Old Camp Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Clanalpine Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Jung Soil**

*Range seeding:* Poor—small stones, droughty

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—depth to rock, small stones, too clayey

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Old Camp Soil**

*Range seeding:* Poor—large stones, droughty

*Roadfill:* Poor—depth to rock, large stones, slope

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope, large stones

*Local roads and streets:* Severe—depth to rock, slope, large stones

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Clanalpine Soil**

*Range seeding:* Poor—small stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Jung, Old Camp, and Clanalpine soils—VIIIs, nonirrigated

*Range site:* Jung soil—027X032N; Old Camp soil—027X007N; Clanalpine soil—025X061N; Inclusion 1—none; Inclusion 2—027X011N; Inclusion 3—027X028N

### **3848—Jung-McVegas-Enko association**

*Positions on landscape:* Foothills

### **Composition**

#### *Major components:*

Jung very gravelly loam, 15 to 30 percent slopes—50 percent

McVegas very gravelly loam, 8 to 15 percent slopes—20 percent

Enko gravelly fine sandy loam, 2 to 8 percent slopes—15 percent

#### *Contrasting inclusions:*

Duric Natrargids, fine-loamy, mixed, mesic, 4 to 15 percent slopes—5 percent

Durixerollic Haplargids, loamy-skeletal, mixed, mesic, 4 to 15 percent slopes—5 percent

Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic, 8 to 30 percent slopes—4 percent

Rock outcrop—1 percent

### **Characteristics of the Jung Soil**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic

*Positions on landscape:* North- and east-facing side slopes of foothills

*Parent material:* Residuum derived from volcanic and metavolcanic rock

*Slope:* 15 to 30 percent

*Elevation:* 6,200 to 6,700 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, Indian ricegrass, black sagebrush, small rabbitbrush

#### **Typical Profile**

*Rock fragments on surface:* 40 percent pebbles

*Depth:* 0 to 8 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 8 to 19 inches

*Texture:* Very cobbly clay

*Structure:* Prismatic

*Consistence:* Very hard, firm

*Reaction:* Moderately alkaline

*Depth:* 19 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.4 to 2.5 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—7

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the McVegas Soil**

*Classification:* Haplic Nadurargids, clayey-skeletal, montmorillonitic, mesic, shallow

*Positions on landscape:* South-facing side slopes of foothills

*Parent material:* Residuum derived from volcanic and metavolcanic rock

*Slope:* 8 to 15 percent

*Elevation:* 6,200 to 6,700 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Bottlebrush squirreltail, shadscale, bud sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 5 percent cobbles, 50 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

*Depth:* 5 to 19 inches

*Texture:* Very cobbly clay

*Structure:* Prismatic

*Consistence:* Very hard, very firm

*Reaction:* Strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 15 to 30

*Depth:* 19 to 22 inches

*Kind of material:* Cemented hardpan

*Depth:* 22 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to the hardpan:* 14 to 20 inches

*Depth to bedrock:* 15 to 23 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.4 to 2.6 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.20; T value—1;  
 wind erodibility group—8  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

### **Characteristics of the Enko Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Toe slopes, inset fan remnants between foothills  
*Parent material:* Mixed alluvium that includes loess and ash  
*Slope:* 2 to 8 percent  
*Elevation:* 6,200 to 6,700 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Wyoming big sagebrush, Indian ricegrass, bottlebrush squirreltail

### **Typical Profile**

*Depth:* 0 to 6 inches  
*Texture:* Gravelly fine sandy loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Neutral  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 6 to 18 inches  
*Texture:* Loam, sandy loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 18 to 60 inches  
*Texture:* Fine sandy loam, loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 6.1 to 8.2 inches  
*Water-supplying capacity:* 8 inches

*Runoff:* Slow  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.10; T value—5;  
 wind erodibility group—4  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Duric Natrargids, fine-loamy, mixed, mesic  
*Positions on landscape:* Fan piedmont remnants bordering foothills  
*Distinctive present vegetation:* Shadscale, bud sagebrush

#### **Inclusion 2**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Fan aprons bordering foothills  
*Distinctive present vegetation:* Black sagebrush, bottlebrush squirreltail

#### **Inclusion 3**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Crests and shoulder slopes of foothills  
*Distinctive present vegetation:* Wyoming big sagebrush, needlegrass

#### **Inclusion 4**

*Positions on landscape:* Scattered peaks  
*Distinctive present vegetation:* None

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Jung Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### **McVegas Soil**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor

#### **Enko Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Jung Soil**

*Range seeding:* Poor—small stones, droughty  
*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, too clayey  
*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope  
*Local roads and streets:* Severe—depth to rock, slope  
*Pond reservoir areas:* Severe—depth to rock, slope  
*Embankments, dikes, and levees:* Poor—thin layer  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **McVegas Soil**

*Range seeding:* Poor—too arid, small stones, droughty  
*Roadfill:* Poor—depth to rock, low strength  
*Topsoil:* Poor—depth to rock, cemented pan, too clayey  
*Daily cover for landfill:* Poor—depth to rock, hard to pack, large stones  
*Shallow excavations:* Severe—depth to rock, cemented pan  
*Local roads and streets:* Severe—depth to rock, low strength  
*Pond reservoir areas:* Severe—depth to rock, cemented pan, slope  
*Embankments, dikes, and levees:* Severe—excess sodium  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Enko Soil**

*Range seeding:* Fair—too arid  
*Roadfill:* Good  
*Topsoil:* Fair—small stones  
*Daily cover for landfill:* Good  
*Shallow excavations:* Slight  
*Local roads and streets:* Moderate—frost action  
*Pond reservoir areas:* Moderate—seepage, slope  
*Embankments, dikes, and levees:* Severe—piping  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Jung and McVegas soils—VIIIs, nonirrigated; Enko soil—IVe, irrigated, and VIs, nonirrigated  
*Range site:* Jung soil—024X030N; McVegas soil—024X002N; Enko soil—028B010N; Inclusion 1—024X002N; Inclusion 2—024X030N; Inclusion 3—028B010N; Inclusion 4—none

### **3851—Decram-Hapgood association**

*Positions on landscape:* Mountains

#### **Composition**

*Major components:*  
 Decram extremely gravelly loam, 15 to 30 percent slopes—30 percent

Decram very gravelly loam, 30 to 50 percent slopes—30 percent

Hapgood gravelly loam, 30 to 50 percent slopes—25 percent

#### **Contrasting inclusions:**

Aridic Haploxerolls, loamy-skeletal, mixed, frigid—9 percent

Rock outcrop—3 percent

Rubble land—2 percent

Entic Cryumbrepts, loamy-skeletal, mixed—1 percent

#### **Characteristics of the Decram Soil, Moderately Steep**

*Classification:* Typic Cryoborolls, loamy-skeletal, mixed  
*Positions on landscape:* Crests and the upper side slopes of mountains

*Parent material:* Residuum derived from quartzite, chert, and volcanic rock

*Slope:* 15 to 30 percent

*Elevation:* 7,800 to 8,600 feet

*Average annual precipitation:* About 18 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 40 days

*Dominant present vegetation:* Low sagebrush, bluegrass, Idaho fescue

#### **Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 60 percent pebbles

*Depth:* 0 to 11 inches

*Texture:* Extremely gravelly loam

*Structure:* Granular

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 11 to 28 inches

*Texture:* Very gravelly loam, very cobbly loam

*Structure:* Angular blocky

*Consistence:* Slightly hard, firm

*Depth:* 28 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 0.8 to 2.4 inches

*Water-supplying capacity:* 10 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.05; T value—2; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Decram Soil, Steep**

*Classification:* Typic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* The lower side slopes of mountains

*Parent material:* Residuum derived from quartzite, chert, and volcanic rock

*Slope:* 30 to 50 percent

*Elevation:* 7,800 to 8,600 feet

*Average annual precipitation:* About 18 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 50 days

*Dominant present vegetation:* Low sagebrush, bluegrass, Idaho fescue

### **Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 40 percent pebbles

*Depth:* 0 to 11 inches

*Texture:* Very gravelly loam

*Structure:* Granular

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 11 to 28 inches

*Texture:* Very gravelly loam, very cobbly loam

*Structure:* Angular blocky

*Consistence:* Slightly hard, firm

*Depth:* 28 inches

*Kind of material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 1.2 to 3.5 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.10; T value—2; wind erodibility group—7

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Hapgood Soil**

*Classification:* Pachic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* North-facing side slopes of mountains

*Parent material:* Colluvium that includes loess and volcanic ash

*Slope:* 30 to 50 percent

*Elevation:* 7,800 to 8,600 feet

*Average annual precipitation:* About 16 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 50 days

*Dominant present vegetation:* Idaho fescue, mountain brome, bluegrass, mountain big sagebrush, serviceberry

### **Typical Profile**

*Rock fragments on surface:* 10 percent pebbles

*Depth:* 0 to 17 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 17 to 40 inches

*Texture:* Very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 40 to 60 inches

*Texture:* Very cobbly loam, very gravelly loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Neutral

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 5.8 to 7.4 inches

*Water-supplying capacity:* 16 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Aridic Haploxerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* South-facing, lower side slopes of mountains

*Distinctive present vegetation:* Bluebunch wheatgrass, mountain big sagebrush



**Inclusion 2**

*Positions on landscape:* Scattered peaks

*Distinctive present vegetation:* None

**Inclusion 3**

*Positions on landscape:* Side slopes of mountains

*Distinctive present vegetation:* None

**Inclusion 4**

*Classification:* Entic Cryumbrepts, loamy-skeletal, mixed

*Positions on landscape:* North-facing snow pockets  
below areas of Rock outcrop

*Distinctive present vegetation:* Needlegrass, bluebunch  
wheatgrass

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Decram Soil, Moderately Steep**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Decram Soil, Steep**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Hapgood Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses****Decram Soil, Moderately Steep**

*Range seeding:* Poor—small stones, droughty

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small  
stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

**Decram Soil, Steep**

*Range seeding:* Poor—small stones, droughty

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small  
stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

**Hapgood Soil**

*Range seeding:* Poor—erodes easily

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—large  
stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Decram soils—VII<sub>s</sub>,  
nonirrigated; Hapgood soil—VII<sub>e</sub>, nonirrigated

*Range site:* Decram soil, moderately steep—024X016N;  
Decram soil, steep—024X027N; Hapgood soil—  
024X032N; Inclusion 1—024X029N; Inclusions 2  
and 3—none; Inclusion 4—024X028N

**3852—Decram-Hapgood-Chad association**

*Positions on landscape:* Mountains

**Composition**

*Major components:*

Decram very gravelly loam, 15 to 30 percent slopes, 40  
percent

Hapgood gravelly loam, 15 to 30 percent slopes—30  
percent

Chad cobbly loam, 30 to 50 percent slopes—15 percent

*Contrasting inclusions:*

Argic Pachic Cryoborolls, loamy-skeletal, mixed, 8 to 30  
percent slopes—7 percent

Rock outcrop—4 percent

Cumulic Cryaquolls, loamy-skeletal, mixed, 2 to 8  
percent slopes, drained—3 percent

Cumulic Cryaquolls, loamy-skeletal, mixed, 2 to 8  
percent slopes—1 percent

**Characteristics of the Decram Soil**

*Classification:* Typic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* Crests and the upper side  
slopes of mountains

*Parent material:* Residuum derived from quartzite, chert,  
and volcanic rock

*Slope:* 15 to 30 percent

*Elevation:* 7,000 to 9,000 feet

*Average annual precipitation:* About 18 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 40 days

*Dominant present vegetation:* Low sagebrush,  
bluegrass, Idaho fescue

**Typical Profile**

*Rock fragments on surface:* 10 percent stones, 10 percent cobbles, 40 percent pebbles

*Depth:* 0 to 11 inches

*Texture:* Very gravelly loam

*Structure:* Granular

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 11 to 28 inches

*Texture:* Very gravelly loam, very cobbly loam

*Structure:* Angular blocky

*Consistence:* Slightly hard, firm

*Depth:* 28 inches

*Kind of material:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 1.2 to 3.5 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.10; T value—2; wind erodibility group—7

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

**Characteristics of the Hapgood Soil**

*Classification:* Pachic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* North-facing side slopes of mountains

*Parent material:* Colluvium that includes loess and volcanic ash

*Slope:* 15 to 30 percent

*Elevation:* 7,000 to 9,000 feet

*Average annual precipitation:* About 16 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 50 days

*Dominant present vegetation:* Idaho fescue, mountain brome, bluegrass, mountain big sagebrush, serviceberry

**Typical Profile**

*Rock fragments on surface:* 10 percent pebbles

*Depth:* 0 to 17 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 17 to 40 inches

*Texture:* Very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 40 to 60 inches

*Texture:* Very cobbly loam, very gravelly loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Neutral

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 5.8 to 7.4 inches

*Water-supplying capacity:* 16 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

**Characteristics of the Chad Soil**

*Classification:* Aridic Argixerolls, fine, mixed, frigid

*Positions on landscape:* South-facing side slopes of mountains

*Parent material:* Residuum derived from chert and shale

*Slope:* 30 to 50 percent

*Elevation:* 7,000 to 8,200 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Bluebunch wheatgrass, Thurber needlegrass, mountain big sagebrush

**Typical Profile**

*Rock fragments on surface:* 20 percent cobbles, 10 percent pebbles

*Depth:* 0 to 17 inches

*Texture:* Cobbly loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 17 to 42 inches

*Texture:* Gravelly clay, clay

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 42 inches

*Kind of material:* Weathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 40 to 60 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 4.5 to 7.0 inches

*Water-supplying capacity:* 13 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.28; T value—3; hazard erodibility group—6

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Argic Pachic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* Concave, north-facing, upper side slopes of mountains

*Distinctive present vegetation:* Chokecherry, serviceberry

#### **Inclusion 2**

*Positions on landscape:* Scattered peaks

*Distinctive present vegetation:* None

#### **Inclusion 3**

*Classification:* Cumulic Cryaquolls, loamy-skeletal, mixed

*Positions on landscape:* Entrenched areas of intermountain drainageways

*Distinctive present vegetation:* Basin big sagebrush, basin wildrye

#### **Inclusion 4**

*Classification:* Cumulic Cryaquolls, loamy-skeletal, mixed

*Positions on landscape:* Narrow, smooth intermountain drainageways

*Distinctive present vegetation:* Willow, sedge, tufted hairgrass, bluegrass

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Decram Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Hapgood Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Chad Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Decram Soil**

*Range seeding:* Poor—small stones, droughty

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

#### **Hapgood Soil**

*Range seeding:* Fair—erodes easily

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Chad Soil**

*Range seeding:* Poor—erodes easily

*Roadfill:* Poor—slope, shrink-swell

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—too clayey, hard to pack, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope, shrink-swell

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—hard to pack

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Decram soil—VII<sub>1</sub>, nonirrigated; Hapgood soil—VI<sub>e</sub>, nonirrigated; Chad soil—VII<sub>e</sub>, nonirrigated

*Range site:* Decram soil—028B038N; Hapgood soil—028B029N; Chad soil—028B027N; Inclusion 1—028B026N; Inclusion 2—none; Inclusion 3—028B024N; Inclusion 4—025X005N

### **3861—Duco-Itca-Roca association**

*Positions on landscape:* Mountains

### **Composition**

#### *Major components:*

Duco very cobbly loam, 30 to 50 percent slopes—45 percent

Itca very gravelly loam, 30 to 50 percent slopes—25 percent

Roca very cobbly loam, 30 to 50 percent slopes—15 percent

#### *Contrasting inclusions:*

Rock outcrop—6 percent

Typic Argixerolls, loamy-skeletal, mixed, frigid, 15 to 50 percent slopes—5 percent

Cumulic Haploxerolls, fine-loamy, mixed, frigid, 2 to 8 percent slopes—4 percent

### **Characteristics of the Duco Soil**

*Classification:* Lithic Argixerolls, loamy-skeletal, mixed, mesic

*Positions on landscape:* Convex crests and the upper side slopes of mountains

*Parent material:* Residuum derived from rhyolite and andesite

*Slope:* 30 to 50 percent

*Elevation:* 5,800 to 7,500 feet

*Average annual precipitation:* About 12 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Singleleaf pinyon, Utah juniper, antelope bitterbrush, mountain big sagebrush

*Site index for common trees:* Singleleaf pinyon—35; Utah juniper—35

#### **Typical Profile**

*Rock fragments on surface:* 20 percent cobbles, 20 percent pebbles

*Depth:* 0 to 6 inches

*Texture:* Very cobbly loam

*Structure:* Granular

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 6 to 15 inches

*Texture:* Very gravelly clay loam, very cobbly clay loam

*Structure:* Angular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Neutral

*Depth:* 15 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 0.8 to 2.2 inches

*Water-supplying capacity:* 11 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Itca Soil**

*Classification:* Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid

*Positions on landscape:* Convex, north- and east-facing side slopes of mountains

*Parent material:* Residuum derived from extrusive volcanic and pyroclastic rock

*Slope:* 30 to 50 percent

*Elevation:* 5,800 to 8,000 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Idaho fescue, bluegrass, singleleaf pinyon, Utah juniper, mountain big sagebrush

*Site index for singleleaf pinyon:* 70

#### **Typical Profile**

*Rock fragments on surface:* 5 percent cobbles, 40 percent pebbles

*Depth:* 0 to 9 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 9 to 17 inches

*Texture:* Very cobbly clay, very gravelly clay loam

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Depth:* 17 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 0.9 to 2.2 inches

*Water-supplying capacity:* 10 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—1;  
wind erodibility group—8

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Roca Soil**

*Classification:* Xerollic Haplargids, clayey-skeletal,  
montmorillonitic, frigid

*Positions on landscape:* South-facing side slopes of  
mountains

*Parent material:* Residuum derived from shale and chert

*Slope:* 30 to 50 percent

*Elevation:* 5,800 to 7,500 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Bluegrass, bluebunch  
wheatgrass, big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 20  
percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Very cobbly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 4 to 24 inches

*Texture:* Very gravelly clay loam, very gravelly clay

*Structure:* Angular blocky

*Consistence:* Hard, firm

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 24 inches

*Kind of material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches

*Depth to a seasonal high water table:* More than 60  
inches

*Frequency of flooding:* None

*Permeability:* Very slow

*Available water capacity:* 2.1 to 4.6 inches

*Water-supplying capacity:* 11 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—2;  
wind erodibility group—8

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Positions on landscape:* Scattered peaks

*Distinctive present vegetation:* None

#### **Inclusion 2**

*Classification:* Typic Argixerolls, loamy-skeletal, mixed,  
frigid

*Positions on landscape:* Concave snow pockets on north  
aspects of mountains

*Distinctive present vegetation:* Idaho fescue, mountain  
big sagebrush, needlegrass

#### **Inclusion 3**

*Classification:* Cumulic Haplaquolls, fine-loamy, mixed,  
frigid

*Positions on landscape:* Intermountain drainageways

*Distinctive present vegetation:* Basin big sagebrush,  
basin wildrye

### **Major Current Uses**

Livestock grazing, wildlife habitat, cordwood production

### **Suitability for Wildlife Habitat Elements**

#### **Duco Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Fair

#### **Itca Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Roca Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Duco Soil**

*Range seeding:* Poor—large stones, droughty

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small  
stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones,  
thin layer

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

#### **Itca Soil**

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth rock, slope

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, too clayey, small stones

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Roca Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Duco, Itca, and Roca soils—VIIIs, nonirrigated

*Range site:* Duco soil—025X062N; Itca soil—025X061N; Roca soil—024X028N; Inclusion 1—none; Inclusion 2—028B030N; Inclusion 3—028B024N

### **3863—Duco-Clan Alpine-Jung association**

*Positions on landscape:* Mountains

#### **Composition**

*Major components:*

Duco stony loam, 15 to 30 percent slopes—45 percent

Clan Alpine very gravelly loam, 30 to 50 percent slopes—25 percent

Jung very gravelly loam, 15 to 30 percent slopes—15 percent

*Contrasting inclusions:*

Rock outcrop—7 percent

Aridic Haploxerolls, loamy-skeletal, mixed, frigid, 2 to 8 percent slopes—5 percent

Old Camp very stony loam, 15 to 30 percent slopes—3 percent

#### **Characteristics of the Duco Soil**

*Classification:* Lithic Argixerolls, loamy-skeletal, mixed, mesic

*Positions on landscape:* Concave, lower side slopes and south-facing, upper side slopes and crests of mountains

*Parent material:* Residuum derived from rhyolite and andesite

*Slope:* 15 to 30 percent

*Elevation:* 6,500 to 7,500 feet

*Average annual precipitation:* About 12 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Singleleaf pinyon, Utah juniper, antelope bitterbrush, mountain big sagebrush

*Site index for common trees:* Singleleaf pinyon—35; Utah juniper—35

#### **Typical Profile**

*Rock fragments on surface:* 10 percent stones and boulders, 15 percent cobbles, 20 percent pebbles

*Depth:* 0 to 7 inches

*Texture:* Stony loam

*Structure:* Granular

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 7 to 19 inches

*Texture:* Very gravelly clay loam, very cobbly clay loam

*Structure:* Angular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Neutral

*Depth:* 19 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 0.8 to 2.0 inches

*Water-supplying capacity:* 11 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.28; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Clan Alpine Soil**

*Classification:* Typic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* The upper side slopes of mountains

*Parent material:* Colluvium and residuum derived from rhyolitic and andesitic tuff

*Slope:* 30 to 50 percent

*Elevation:* 6,500 to 7,600 feet  
*Average annual precipitation:* About 15 inches  
*Average annual air temperature:* About 41 degrees F  
*Frost-free season:* About 70 days  
*Dominant present vegetation:* Singleleaf pinyon,  
 mountain big sagebrush, bluebunch wheatgrass,  
 Utah juniper  
*Site index for singleleaf pinyon:* 75

### **Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 40 percent pebbles

*Depth:* 0 to 10 inches  
*Texture:* Very gravelly loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral

*Depth:* 10 to 39 inches  
*Texture:* Very gravelly clay loam, very cobbly loam  
*Structure:* Angular blocky  
*Consistence:* Hard, friable  
*Reaction:* Mildly alkaline

*Depth:* 39 inches  
*Kind of material:* Weathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 2.6 to 5.0 inches  
*Water-supplying capacity:* 14 inches  
*Runoff:* Rapid  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.17; T value—2; wind erodibility group—7  
*Hazard of erosion:* By water—severe; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Moderate

### **Characteristics of the Jung Soil**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic  
*Positions on landscape:* Convex, lower side slopes of mountains  
*Parent material:* Residuum derived from volcanic and metavolcanic rock  
*Slope:* 15 to 30 percent  
*Elevation:* 6,500 to 7,000 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bluegrass, Indian ricegrass, black sagebrush, small rabbitbrush

### **Typical Profile**

*Rock fragments on surface:* 40 percent pebbles

*Depth:* 0 to 8 inches  
*Texture:* Very gravelly loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Neutral

*Depth:* 8 to 19 inches  
*Texture:* Very cobbly clay  
*Structure:* Prismatic  
*Consistence:* Very hard, firm  
*Reaction:* Moderately alkaline

*Depth:* 19 inches  
*Kind of material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 1.4 to 2.5 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—7  
*Hazard of erosion:* By water—moderate; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Positions on landscape:* Scattered peaks  
*Distinctive present vegetation:* None

#### **Inclusion 2**

*Classification:* Aridic Haploxerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* Intermountain drainageways  
*Distinctive present vegetation:* Wyoming big sagebrush, needlegrass

#### **Inclusion 3**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* The lower, north-facing side slopes of mountains  
*Distinctive present vegetation:* Wyoming big sagebrush, needlegrass, bluegrass

**Major Current Uses**

Livestock grazing, wildlife habitat, cordwood production

**Suitability for Wildlife Habitat Elements****Duco Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Fair

**Clanalpine Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Jung Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses****Duco Soil**

*Range seeding:* Poor—large stones, droughty

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones, thin layer

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

**Clanalpine Soil**

*Range seeding:* Poor—small stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Jung Soil**

*Range seeding:* Poor—small stones, droughty

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, too clayey

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Duco soil—VIIe, nonirrigated; Clanalpine and Jung soils—VIIs, nonirrigated

*Range site:* Duco soil—025X062N; Clanalpine soil—025X061N; Jung soil—027X032N; Inclusion 1—none; Inclusion 2—027X008N; Inclusion 3—027X007N

**3881—Layview-Packer-Hapgood association**

*Positions on landscape:* Mountains

**Composition**

*Major components:*

Layview extremely cobbly loam, 4 to 15 percent slopes—40 percent

Packer gravelly loam, 15 to 30 percent slopes—30 percent

Hapgood gravelly loam, 15 to 30 percent slopes—15 percent

*Contrasting inclusions:*

Packer very cobbly loam, 8 to 15 percent slopes—7 percent

Argic Lithic Cryoborolls, loamy-skeletal, mixed, 15 to 30 percent slopes—5 percent

Rock outcrop—2 percent

Rubble land—1 percent

**Characteristics of the Layview Soil**

*Classification:* Argic Lithic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* Windswept crests and shoulder slopes of mountains

*Parent material:* Residuum derived from andesite, rhyolite, and tuff

*Slope:* 4 to 15 percent

*Elevation:* 8,000 to 10,000 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 50 days

*Dominant present vegetation:* Idaho fescue, bluegrass, low sagebrush, black sagebrush

**Typical Profile**

*Rock fragments on surface:* 35 percent cobbles, 25 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Extremely cobbly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral



*Depth:* 3 to 12 inches  
*Texture:* Very gravelly clay loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral

*Depth:* 12 inches  
*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 14 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 0.8 to 1.4 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.05; T value—1; wind erodibility group—8  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Moderate

#### **Characteristics of the Packer Soil**

*Classification:* Argic Cryoborolls, loamy-skeletal, mixed  
*Positions on landscape:* Convex side slopes of mountains  
*Parent material:* Mixed residuum that includes loess and volcanic ash  
*Slope:* 15 to 30 percent  
*Elevation:* 8,000 to 10,000 feet  
*Average annual precipitation:* About 15 inches  
*Average annual air temperature:* About 42 degrees F  
*Frost-free season:* About 50 days  
*Dominant present vegetation:* Idaho fescue, bluegrass, low sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 25 percent pebbles  
*Depth:* 0 to 10 inches  
*Texture:* Gravelly loam  
*Structure:* Subangular blocky  
*Consistence:* Soft, very friable  
*Reaction:* Neutral  
*Depth:* 10 to 21 inches  
*Texture:* Extremely cobbly clay loam, extremely cobbly loam  
*Structure:* Angular blocky  
*Consistence:* Hard, friable  
*Reaction:* Neutral  
*Depth:* 21 to 60 inches

*Texture:* Extremely cobbly sandy loam, extremely cobbly loam

*Structure:* Massive  
*Consistence:* Soft, very friable  
*Reaction:* Neutral

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 6 to 8 inches  
*Water-supplying capacity:* 12 inches  
*Runoff:* Rapid  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.20; T value—3; wind erodibility group—6  
*Hazard of erosion:* By water—moderate; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Moderate

#### **Characteristics of the Hapgood Soil**

*Classification:* Pachic Cryoborolls, loamy-skeletal, mixed  
*Positions on landscape:* Concave side slopes of mountains  
*Parent material:* Colluvium that includes loess and volcanic ash  
*Slope:* 15 to 30 percent  
*Elevation:* 8,000 to 10,000 feet  
*Average annual precipitation:* About 16 inches  
*Average annual air temperature:* About 42 degrees F  
*Frost-free season:* About 50 days  
*Dominant present vegetation:* Idaho fescue, needlegrass, snowberry, bluegrass, mountain big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 10 percent pebbles  
*Depth:* 0 to 17 inches  
*Texture:* Gravelly loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral  
*Depth:* 17 to 40 inches  
*Texture:* Very gravelly loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral  
*Depth:* 40 to 60 inches  
*Texture:* Very cobbly loam, very gravelly loam  
*Structure:* Massive  
*Consistence:* Soft, very friable  
*Reaction:* Neutral

### Soil and Water Features

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 6.0 to 7.5 inches  
*Water-supplying capacity:* 16 inches  
*Runoff:* Rapid  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—6  
*Hazard of erosion:* By water—moderate; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Moderate

### Contrasting Inclusions

#### Inclusion 1

*Classification:* Argic Cryoborolls, loamy-skeletal, mixed  
*Positions on landscape:* Convex, windswept crests and shoulder slopes of mountains  
*Distinctive present vegetation:* Black sagebrush, low sagebrush, bluegrass

#### Inclusion 2

*Classification:* Argic Lithic Cryoborolls, loamy-skeletal, mixed  
*Positions on landscape:* Sheltered crests, shoulder slopes, and back slopes of mountains  
*Distinctive present vegetation:* Black sagebrush, Idaho fescue

#### Inclusion 3

*Positions on landscape:* Scattered peaks  
*Distinctive present vegetation:* None

#### Inclusion 4

*Positions on landscape:* Rock stripes below areas of Rock outcrop  
*Distinctive present vegetation:* None

### Major Current Uses

Livestock grazing, wildlife habitat

### Suitability for Wildlife Habitat Elements

#### Layview Soil

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### Packer Soil

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### Hapgood Soil

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

### Suitability and Limitations for Selected Uses

#### Layview Soil

*Range seeding:* Poor—droughty, small stones  
*Roadfill:* Poor—depth to rock  
*Topsoil:* Poor—depth to rock, small stones  
*Daily cover for landfill:* Poor—depth to rock, small stones  
*Shallow excavations:* Severe—depth to rock  
*Local roads and streets:* Severe—depth to rock  
*Pond reservoir areas:* Severe—depth to rock, slope  
*Embankments, dikes, and levees:* Severe—thin layer  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### Packer Soil

*Range seeding:* Fair—erodes easily, small stones  
*Roadfill:* Poor—slope  
*Topsoil:* Poor—small stones, area reclaim, slope  
*Daily cover for landfill:* Poor—small stones, slope  
*Shallow excavations:* Severe—slope  
*Local roads and streets:* Severe—slope  
*Pond reservoir areas:* Severe—seepage, slope  
*Embankments, dikes, and levees:* Severe—seepage, large stones  
*Sand:* Improbable source—excess fines, large stones  
*Gravel:* Improbable source—excess fines, large stones

#### Hapgood Soil

*Range seeding:* Fair—erodes easily, small stones  
*Roadfill:* Poor—slope  
*Topsoil:* Poor—small stones, area reclaim, slope  
*Daily cover for landfill:* Poor—small stones, slope  
*Shallow excavations:* Severe—slope  
*Local roads and streets:* Severe—slope  
*Pond reservoir areas:* Severe—slope  
*Embankments, dikes, and levees:* Moderate—large stones  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

### Interpretive Groups

*Land capability classification:* Layview soil—VIIIs, nonirrigated; Packer and Hapgood soils—VIe, nonirrigated  
*Range site:* Layview soil—024X016N; Packer soil—028B037N; Hapgood soil—024X032N; Inclusion 1—024X016N; Inclusion 2—024X042N; Inclusions 3 and 4—none

### 3891—Labshaft-Hapgood-Rock outcrop association

*Positions on landscape:* Mountains

### **Composition**

#### *Major components:*

Labshaft extremely stony loam, 30 to 50 percent slopes—45 percent  
 Hapgood gravelly loam, 30 to 50 percent slopes—25 percent  
 Rock outcrop—15 percent

#### *Contrasting inclusions:*

Layview very cobbly loam, 8 to 15 percent slopes—7 percent  
 Pachic Cryoborolls, loamy-skeletal, mixed, 15 to 30 percent slopes—5 percent  
 Cumulic Haploxerolls, fine-loamy, mixed, frigid, 4 to 15 percent slopes—3 percent

### **Characteristics of the Labshaft Soil**

*Classification:* Lithic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* The upper side slopes of mountains

*Parent material:* Residuum derived from siliceous rock

*Slope:* 30 to 50 percent

*Elevation:* 7,800 to 8,500 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 43 degrees F

*Frost-free season:* About 50 days

*Dominant present vegetation:* Curleaf mountainmahogany, mountain big sagebrush, needlegrass

#### **Typical Profile**

*Rock fragments on surface:* 30 percent stones and boulders, 30 percent cobbles, 10 percent pebbles

*Depth:* 0 to 8 inches

*Texture:* Extremely stony loam

*Structure:* Granular

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 8 to 15 inches

*Texture:* Extremely gravelly loam

*Structure:* Angular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Neutral

*Depth:* 15 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 0.8 to 2.0 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.10; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Hapgood Soil**

*Classification:* Pachic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* The intermediate and lower side slopes of mountains

*Parent material:* Colluvium that includes loess and volcanic ash

*Slope:* 30 to 50 percent

*Elevation:* 7,800 to 8,500 feet

*Average annual precipitation:* About 16 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 50 days

*Dominant present vegetation:* Idaho fescue, mountain brome, mountain big sagebrush, serviceberry

#### **Typical Profile**

*Rock fragments on surface:* 10 percent pebbles

*Depth:* 0 to 17 inches

*Texture:* Gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 17 to 40 inches

*Texture:* Very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Depth:* 40 to 60 inches

*Texture:* Very cobbly loam, very gravelly loam

*Structure:* Massive

*Consistence:* Soft, very friable

*Reaction:* Neutral

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 5.8 to 7.4 inches

*Water-supplying capacity:* 16 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Rock Outcrop**

*Positions on landscape:* Scattered peaks and cliffs

*Dominant present vegetation:* None

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Argic Lithic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* Crests of mountains

*Distinctive present vegetation:* Low sagebrush, black sagebrush, bluegrass

#### **Inclusion 2**

*Classification:* Pachic Cryoborolls, loamy-skeletal, mixed

*Positions on landscape:* The lower, north-facing side slopes of mountains

*Distinctive present vegetation:* Chokecherry, snowberry, currant

#### **Inclusion 3**

*Classification:* Cumulic Haploxerolls, fine-loamy, mixed, frigid

*Positions on landscape:* Intermountain drainageways

*Distinctive present vegetation:* Aspen, willow, rose, iris, sedge, bluegrass

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Labshaft Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Hapgood Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Labshaft Soil**

*Range seeding:* Poor—large stones, droughty

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, small stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Hapgood Soil**

*Range seeding:* Poor—erodes easily

*Roadfill:* Poor—slope

*Topsoil:* Poor—small stones, area reclaim, slope

*Daily cover for landfill:* Poor—small stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—slope

*Embankments, dikes, and levees:* Moderate—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Labshaft soil—VIIIs, nonirrigated; Hapgood soil—VIIe, nonirrigated; Rock outcrop—VIIIIs, nonirrigated

*Range site:* Labshaft soil—028B043N; Hapgood soil—024X032N; Rock outcrop—none; Inclusion 1—024X016N; Inclusion 2—024X032N; Inclusion 3—none

## **3950—Hooplite-Jung-Izod association**

*Positions on landscape:* Mountains

### **Composition**

*Major components:*

Hooplite very gravelly loam, 30 to 50 percent slopes—50 percent

Jung very gravelly loam, 4 to 15 percent slopes—20 percent

Izod very cobbly loam, 30 to 75 percent slopes—15 percent

*Contrasting inclusions:*

Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic, 30 to 50 percent slopes—5 percent

Xerollic Haplargids, fine, montmorillonitic, mesic, 15 to 30 percent slopes—4 percent

Lithic Torriorthents, clayey-skeletal, montmorillonitic (calcareous), mesic, 30 to 75 percent slopes—3 percent

Rock outcrop—3 percent

### **Characteristics of the Hooplite Soil**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* South-facing side slopes of mountains

*Parent material:* Residuum derived from rhyolitic rock

*Slope:* 30 to 50 percent

*Elevation:* 6,200 to 6,600 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bottlebrush squirreltail, black sagebrush

### **Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 45 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, firm

*Reaction:* Mildly alkaline

*Depth:* 4 to 8 inches

*Texture:* Very gravelly loam, very gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Depth:* 8 inches

*Kind of material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 6 to 14 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 0.5 to 1.5 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Jung Soil**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic

*Positions on landscape:* Crests and convex side slopes of mountains

*Parent material:* Residuum derived from volcanic and metavolcanic rock

*Slope:* 4 to 15 percent

*Elevation:* 6,200 to 6,600 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, Indian ricegrass, black sagebrush, small rabbitbrush

### **Typical Profile**

*Rock fragments on surface:* 40 percent pebbles

*Depth:* 0 to 8 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 8 to 19 inches

*Texture:* Very cobbly clay

*Structure:* Prismatic

*Consistence:* Very hard, firm

*Reaction:* Moderately alkaline

*Depth:* 19 inches

*Kind of material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 1.9 to 2.5 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—7

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

### **Characteristics of the Izod Soil**

*Classification:* Lithic Xeric Torriorthents, loamy-skeletal, carbonatic, mesic

*Positions on landscape:* Convex, east-facing, eroded side slopes of mountains

*Parent material:* Residuum and colluvium derived from limestone

*Slope:* 30 to 75 percent

*Elevation:* 6,200 to 6,600 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, bottlebrush squirreltail, black sagebrush

### **Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 20 percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Depth:* 4 to 10 inches

*Texture:* Very gravelly loam, extremely gravelly loam

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Depth:* 10 inches

*Kind of material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 7 to 14 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 0.7 to 2.0 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Slightly convex, north-facing side slopes of mountains

*Distinctive present vegetation:* Singleleaf pinyon, black sagebrush, bluegrass

#### **Inclusion 2**

*Classification:* Xerollic Haplargids, fine, montmorillonitic, mesic

*Positions on landscape:* Toe slopes of mountains

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Inclusion 3**

*Classification:* Lithic Torriorthents, clayey-skeletal, montmorillonitic (calcareous), mesic

*Positions on landscape:* Eroded, lower side slopes of mountains

*Distinctive present vegetation:* Spiny hopsage, black sagebrush

#### **Inclusion 4**

*Positions on landscape:* Scattered peaks

*Distinctive present vegetation:* None

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Hooplite Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

#### **Jung Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Izod Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

### **Suitability and Limitations for Selected Uses**

#### **Hooplite Soil**

*Range seeding:* Poor—droughty, small stones, depth to rock

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Jung Soil**

*Range seeding:* Poor—small stones, droughty

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, too clayey

*Daily cover for landfill:* Poor—depth to rock, small stones

*Shallow excavations:* Severe—depth to rock

*Local roads and streets:* Severe—depth to rock

*Pond reservoir areas:* Severe—depth to rock

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Izod Soil**

*Range seeding:* Poor—droughty, large stones, depth to rock

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Hooplite, Jung, and Izod soils—VIIIs, nonirrigated

*Range site:* Hooplite, Jung, and Izod soils—024X030N;

Inclusion 1—025X063N; Inclusion 2—024X005N;

Inclusion 3—025X025N; Inclusion 4—none

**3951—Hooplite-Old Camp-Puett association***Positions on landscape:* Foothills**Composition***Major components:*

Hooplite very gravelly fine sandy loam, 15 to 50 percent slopes, extremely stony—45 percent

Old Camp very gravelly loam, 15 to 30 percent slopes—25 percent

Puett fine sandy loam, 30 to 50 percent slopes—20 percent

*Contrasting inclusions:*

Jung very gravelly loam; 8 to 15 percent slopes—5 percent

Xerollic Haplargids, fine-loamy, mixed, mesic, 4 to 8 percent slopes—3 percent

Puett gravelly loam, 4 to 15 percent slopes—2 percent

**Characteristics of the Hooplite Soil***Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic*Positions on landscape:* Convex crests and shoulder slopes of foothills*Parent material:* Residuum derived from rhyolitic rock*Slope:* 15 to 50 percent*Elevation:* 6,300 to 6,700 feet*Average annual precipitation:* About 8 inches*Average annual air temperature:* About 49 degrees F*Frost-free season:* About 110 days*Dominant present vegetation:* Bottlebrush squirreltail, black sagebrush**Typical Profile***Rock fragments on surface:* 20 percent stones and boulders, 10 percent cobbles, 45 percent pebbles*Depth:* 0 to 4 inches*Texture:* Very gravelly fine sandy loam*Structure:* Platy*Consistence:* Slightly hard, firm*Reaction:* Mildly alkaline*Depth:* 4 to 8 inches*Texture:* Very gravelly loam, very gravelly clay loam*Structure:* Subangular blocky*Consistence:* Slightly hard, friable*Reaction:* Moderately alkaline*Depth:* 8 inches*Kind of material:* Unweathered bedrock**Soil and Water Features***Depth to bedrock:* 6 to 14 inches*Depth to a seasonal high water table:* More than 60 inches*Frequency of flooding:* None*Permeability:* Moderate*Available water capacity:* 0.5 to 1.5 inches*Water-supplying capacity:* 8 inches*Runoff:* Rapid*Hydrologic group:* D*Erosion factors (upper layer):* K value—0.10; T value—1; wind erodibility group—5*Hazard of erosion:* By water—moderate; by wind—slight*Shrink-swell potential:* Low*Corrosivity:* To steel—high; to concrete—low*Potential for frost action:* Moderate**Characteristics of the Old Camp Soil***Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic*Positions on landscape:* Concave, lower side slopes of foothills*Parent material:* Residuum that is derived from basalt and andesite and includes volcanic ash*Slope:* 15 to 30 percent*Elevation:* 6,300 to 6,700 feet*Average annual precipitation:* About 9 inches*Average annual air temperature:* About 48 degrees F*Frost-free season:* About 110 days*Dominant present vegetation:* Bluegrass, Thurber needlegrass, Wyoming big sagebrush**Typical Profile***Rock fragments on surface:* 30 percent cobbles, 20 percent pebbles*Depth:* 0 to 2 inches*Texture:* Very gravelly loam*Structure:* Platy*Consistence:* Slightly hard, very friable*Reaction:* Mildly alkaline*Depth:* 2 to 14 inches*Texture:* Very gravelly loam, very cobbly clay loam*Structure:* Angular blocky*Consistence:* Slightly hard, friable*Reaction:* Mildly alkaline*Depth:* 14 inches*Kind of material:* Unweathered bedrock**Soil and Water Features***Depth to bedrock:* 10 to 20 inches*Depth to a seasonal high water table:* More than 60 inches*Frequency of flooding:* None*Permeability:* Moderately slow*Available water capacity:* 0.9 to 2.0 inches*Water-supplying capacity:* 9 inches*Runoff:* Medium*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Puett Soil**

*Classification:* Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow

*Positions on landscape:* Eroded scarps and side slopes of foothills

*Parent material:* Residuum derived from tuff and sandstone

*Slope:* 30 to 50 percent

*Elevation:* 6,300 to 6,700 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, Wyoming big sagebrush, Indian ricegrass, black sagebrush

### **Typical Profile**

*Rock fragments on surface:* 5 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Fine sandy loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Depth:* 3 to 13 inches

*Texture:* Coarse sandy loam, sandy loam

*Structure:* Massive

*Consistence:* Soft, friable

*Reaction:* Moderately alkaline

*Depth:* 13 inches

*Kind of material:* Weathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately rapid

*Available water capacity:* 1.3 to 3.0 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.28; T value—1; wind erodibility group—3

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic

*Positions on landscape:* Crests of foothills

*Distinctive present vegetation:* Black sagebrush, bluegrass

#### **Inclusion 2**

*Classification:* Xerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* Fan piedmont remnants and toe slopes of foothills

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Inclusion 3**

*Classification:* Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow

*Positions on landscape:* Eroded, lowest crests of foothills

*Distinctive present vegetation:* Wyoming big sagebrush, black sagebrush, rabbitbrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Hooplite Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

#### **Old Camp Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Puett Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

### **Suitability and Limitations for Selected Uses**

#### **Hooplite Soil**

*Range seeding:* Poor—droughty, small stones, depth to rock

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Old Camp Soil**

*Range seeding:* Poor—small stones, droughty

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones, slope



*Daily cover for landfill:* Poor—depth to rock, small stones, slope  
*Shallow excavations:* Severe—depth to rock, slope  
*Local roads and streets:* Severe—depth to rock, slope  
*Pond reservoir areas:* Severe—depth to rock, slope  
*Embankments, dikes, and levees:* Severe—large stones  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Puett Soil**

*Range seeding:* Poor—droughty, erodes easily  
*Roadfill:* Poor—depth to rock, slope  
*Topsoil:* Poor—depth to rock, slope  
*Daily cover for landfill:* Poor—depth to rock, slope  
*Shallow excavations:* Severe—depth to rock, slope  
*Local roads and streets:* Severe—slope  
*Pond reservoir areas:* Severe—depth to rock, slope  
*Embankments, dikes, and levees:* Severe—seepage, piping  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Hooplite and Old Camp soils—VIIIs, nonirrigated; Puett soil—VIIe, nonirrigated  
*Range site:* Hooplite soil—027X032N; Old Camp soil—024X005N; Puett soil—025X025N; Inclusion 1—027X032N; Inclusion 2—027X008N; Inclusion 3—025X025N

### **3952—Hooplite-Stingdorn association**

*Positions on landscape:* Foothills

#### **Composition**

##### *Major components:*

Hooplite very gravelly fine sandy loam, 4 to 15 percent slopes—55 percent  
 Stingdorn gravelly loam, 2 to 8 percent slopes—30 percent

##### *Contrasting inclusions:*

Typic Haplargids, loamy-skeletal, mixed, mesic, 15 to 30 percent slopes—7 percent  
 Rock outcrop—3 percent  
 Lithic Camborthids, loamy-skeletal, mixed, mesic, 15 to 30 percent slopes—3 percent  
 Rubble land—2 percent

#### **Characteristics of the Hooplite Soil**

*Classification:* Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Side slopes of foothills  
*Parent material:* Residuum derived from rhyolitic rock  
*Slope:* 4 to 15 percent

*Elevation:* 5,900 to 6,600 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bottlebrush squirreltail, black sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 45 percent pebbles  
*Depth:* 0 to 4 inches  
*Texture:* Very gravelly fine sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, firm  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 4 to 8 inches  
*Texture:* Very gravelly loam, very gravelly clay loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 8 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 6 to 14 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 0.5 to 1.4 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.15; T value—1; wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

#### **Characteristics of the Stingdorn Soil**

*Classification:* Typic Durargids, loamy-skeletal, mixed, mesic, shallow  
*Positions on landscape:* Crests of foothills  
*Parent material:* Residuum derived from rhyolite, tuff, and andesite  
*Slope:* 2 to 8 percent  
*Elevation:* 5,900 to 6,600 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bottlebrush squirreltail, shadscale, bud sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 7 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 7 to 15 inches

*Texture:* Very cobbly clay loam

*Structure:* Angular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 5 to 15

*Depth:* 15 to 20 inches

*Kind of material:* Indurated hardpan

*Depth:* 20 inches

*Kind of material:* Unweathered bedrock

#### **Soil and Water Features**

*Depth to the hardpan:* 8 to 20 inches

*Depth to bedrock:* 8 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 0.8 to 2.2 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Typic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* The lower side slopes of foothills

*Distinctive present vegetation:* Shadscale, bud sagebrush

##### **Inclusion 2**

*Positions on landscape:* Rimrock

*Distinctive present vegetation:* None

##### **Inclusion 3**

*Classification:* Lithic Camborthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Slightly convex, upper, north-facing side slopes of foothills

*Distinctive present vegetation:* Indian ricegrass, needleandthread, black sagebrush

##### **Inclusion 4**

*Positions on landscape:* Rock stripes below areas of Rock outcrop

*Distinctive present vegetation:* None

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

##### **Hooplite Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

##### **Stingdorn Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

#### **Suitability and Limitations for Selected Uses**

##### **Hooplite Soil**

*Range seeding:* Poor—droughty, small stones

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones

*Daily cover for landfill:* Poor—depth to rock

*Shallow excavations:* Severe—depth to rock

*Local roads and streets:* Severe—depth to rock

*Pond reservoir areas:* Severe—depth to rock

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

##### **Stingdorn Soil**

*Range seeding:* Poor—droughty, too arid

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, cemented pan, large stones

*Daily cover for landfill:* Poor—depth to rock, large stones

*Shallow excavations:* Severe—depth to rock, cemented pan

*Local roads and streets:* Severe—depth to rock

*Pond reservoir areas:* Severe—depth to rock, cemented pan

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Hooplite and Stingdorn soils—VIIIs, nonirrigated

*Range site:* Hooplite soil—028B016N; Stingdorn soil—

024X002N; Inclusion 1—024X002N; Inclusion 2—none; Inclusion 3—028B011N; Inclusion 4—none

### **3960—Pineval gravelly loam, 2 to 4 percent slopes**

*Positions on landscape:* Fan piedmonts

#### **Composition**

*Major component:*

Pineval gravelly loam, 2 to 4 percent slopes—85 percent

*Contrasting inclusions:*

Xerollic Natrargids, fine-loamy, mixed, mesic, 0 to 4 percent slopes—8 percent

Typic Haplargids, loamy-skeletal, mixed, mesic, 0 to 4 percent slopes—5 percent

Xerollic Camborthids, loamy-skeletal, mixed, mesic, occasionally flooded, 0 to 4 percent slopes—2 percent

#### **Characteristics of the Pineval Soil**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Fan piedmonts

*Parent material:* Mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 5,900 to 6,600 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

#### **Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 60 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 5 to 11 inches

*Texture:* Very gravelly loam, very gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 11 to 60 inches

*Texture:* Extremely gravelly sandy loam, extremely gravelly loamy sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 3.2 to 4.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.28; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Xerollic Natrargids, fine-loamy, mixed, mesic

*Positions on landscape:* The lower margins of fan piedmonts

*Distinctive present vegetation:* Wyoming big sagebrush, black greasewood

##### **Inclusion 2**

*Classification:* Typic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Fan piedmont remnants

*Distinctive present vegetation:* Shadscale, bud sagebrush

##### **Inclusion 3**

*Classification:* Xerollic Camborthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Inset fans

*Distinctive present vegetation:* Black greasewood, basin big sagebrush

#### **Major Current Uses**

Livestock grazing, wildlife habitat

#### **Suitability for Wildlife Habitat Elements**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Suitability and Limitations for Selected Uses**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

### **Interpretive Groups**

*Land capability classification:* Pineval soil—IVe, irrigated; VIs, nonirrigated

*Range site:* Pineval soil—028B010N; Inclusion 1—024X022N; Inclusion 2—024X002N; Inclusion 3—024X022N

## **3961—Pineval-Orovada-Beoska association**

*Positions on landscape:* Fan piedmonts

### **Composition**

*Major components:*

Pineval very cobbly loam, 2 to 8 percent slopes—35 percent

Orovada cobbly fine sandy loam, 2 to 8 percent slopes—30 percent

Beoska very fine sandy loam, 2 to 8 percent slopes—25 percent

*Contrasting inclusions:*

Typic Camborthids, loamy-skeletal, mixed, mesic, 15 to 30 percent slopes—4 percent

Xerollic Haplargids, fine-loamy, mixed, mesic, 15 to 30 percent slopes—4 percent

Settlemyer fine sandy loam, drained, 0 to 4 percent slopes—2 percent

### **Characteristics of the Pineval Soil**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* The upper part of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 2 to 8 percent

*Elevation:* 5,200 to 5,900 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 10 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Very cobbly loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 5 to 11 inches

*Texture:* Very gravelly loam, very gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 11 to 60 inches

*Texture:* Extremely gravelly sandy loam, extremely gravelly loamy sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 3.2 to 4.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.15; T value—5; wind erodibility group—8

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Orovada Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Inset fans

*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 2 to 8 percent

*Elevation:* 5,200 to 5,900 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

### **Typical Profile**

*Rock fragments on surface:* 15 percent cobbles, 10 percent pebbles

*Depth:* 0 to 8 inches  
*Texture:* Cobbly fine sandy loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Neutral  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 8 to 26 inches  
*Texture:* Fine sandy loam, loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 26 to 60 inches  
*Texture:* Stratified fine sandy loam to silt loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 9 to 11 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.28; T value—5; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Beoska Soil**

*Classification:* Duric Natrargids, fine-loamy, mixed, mesic

*Positions on landscape:* The lower part of fan piedmont remnants

*Parent material:* Loess over loamy and gravelly mixed alluvium

*Slope:* 2 to 8 percent

*Elevation:* 5,200 to 5,900 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bottlebrush squirreltail

#### **Typical Profile**

*Depth:* 0 to 13 inches  
*Texture:* Very fine sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

*Depth:* 13 to 24 inches  
*Texture:* Silty clay loam, silt loam  
*Structure:* Prismatic  
*Consistence:* Hard, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46

*Depth:* 24 to 55 inches  
*Texture:* Gravelly very fine sandy loam  
*Structure:* Massive  
*Consistence:* Soft, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 16 to 30 millimhos per centimeter  
*Sodicity (SAR):* 46 to 60

*Depth:* 55 to 60 inches  
*Texture:* Very gravelly fine sandy loam  
*Structure:* Massive  
*Consistence:* Soft, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 16 to 30 millimhos per centimeter  
*Sodicity (SAR):* 46 to 60

#### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 7.8 to 9.7 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.49; T value—5; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

#### **Contrasting Inclusions**

##### **Inclusion 1**

*Classification:* Typic Camborthids, loamy-skeletal, mixed, mesic

*Positions on landscape:* South-facing side slopes of fan piedmont remnants

*Distinctive present vegetation:* Shadscale, Wyoming big sagebrush

#### **Inclusion 2**

*Classification:* Xerollic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* North-facing side slopes of fan piedmont remnants

*Distinctive present vegetation:* Wyoming big sagebrush, pine bluegrass

#### **Inclusion 3**

*Classification:* Fluvaquentic Haplaquolls, fine-loamy, mixed, mesic

*Positions on landscape:* Inset fans dissecting fan piedmont remnants near the front of mountains

*Distinctive present vegetation:* Basin big sagebrush, basin wildrye

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Pineval Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Orovada Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Beoska Soil**

*Wild herbaceous plants (nonirrigated):* Very poor

*Shrubs (nonirrigated):* Very poor

### **Suitability and Limitations for Selected Uses**

#### **Pineval Soil**

*Range seeding:* Poor—large stones

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

#### **Orovada Soil**

*Range seeding:* Fair—too arid, large stones

*Roadfill:* Good

*Topsoil:* Poor—small stones

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Beoska Soil**

*Range seeding:* Poor—too arid, excess salt, excess sodium

*Roadfill:* Good

*Topsoil:* Poor—small stones, excess salt, area reclaim

*Daily cover for landfill:* Poor—small stones

*Shallow excavations:* Slight

*Local roads and streets:* Slight

*Pond reservoir areas:* Severe—seepage

*Embankments, dikes, and levees:* Severe—excess salt, excess sodium

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Pineval and Orovada soils—VIIIs, nonirrigated; Beoska soil—IIIe, irrigated, and VIIIs, nonirrigated

*Range site:* Pineval soil—028B010N; Orovada soil—024X005N; Beoska soil—024X002N; Inclusion 1—024X026N; Inclusion 2—024X005N; Inclusion 3—025X003N

## **3964—Pineval-Orovada association**

*Positions on landscape:* Fan piedmonts

### **Composition**

*Major components:*

Pineval gravelly fine sandy loam, 2 to 8 percent slopes—65 percent

Orovada fine sandy loam, 2 to 4 percent slopes—20 percent

*Contrasting inclusions:*

Xerollic Camborthids, loamy-skeletal, mixed, mesic, 0 to 4 percent slopes—8 percent

Xerollic Camborthids, coarse-loamy, mixed, mesic, 2 to 4 percent slopes—5 percent

Aquic Duric Haploxerolls, coarse-loamy, mixed, mesic, 0 to 2 percent slopes—2 percent

### **Characteristics of the Pineval Soil**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 2 to 8 percent

*Elevation:* 5,700 to 6,000 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Indian ricegrass,  
bluegrass, needlegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 10 percent pebbles

*Depth:* 0 to 5 inches

*Texture:* Gravelly fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 5 to 11 inches

*Texture:* Very gravelly loam, very gravelly clay loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 11 to 60 inches

*Texture:* Extremely gravelly sandy loam, extremely  
gravelly loamy sand

*Structure:* Single grain

*Consistence:* Loose

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60  
inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 3.0 to 4.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.24; T value—5;  
wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Oroveda Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy,  
mixed, mesic

*Positions on landscape:* Inset fans

*Parent material:* Loess mantle that is high in content of  
volcanic ash over mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 5,700 to 6,000 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush,  
bluegrass, Indian ricegrass

### **Typical Profile**

*Depth:* 0 to 8 inches

*Texture:* Fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 8 to 20 inches

*Texture:* Fine sandy loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 20 to 65 inches

*Texture:* Stratified fine sandy loam to silt loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60  
inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 8.4 to 9.6 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.43; T value—5;  
wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Xerollic Camborthids, loamy-skeletal,  
mixed, mesic

*Positions on landscape:* Fan drainageways

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Inclusion 2**

*Classification:* Xerollic Camborthids, coarse-loamy,  
mixed, mesic

*Positions on landscape:* Fan aprons

*Distinctive present vegetation:* Wyoming big sagebrush

### **Inclusion 3**

*Classification:* Aquic Duric Haploxerolls, coarse-loamy, mixed, mesic

*Positions on landscape:* Adjacent to active channels on inset fans

*Distinctive present vegetation:* Basin big sagebrush, basin wildrye

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Pineval Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Orovada Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Pineval Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Poor—small stones, area reclaim

*Daily cover for landfill:* Poor—seepage, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—seepage

*Sand:* Probable source

*Gravel:* Probable source

#### **Orovada Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Fair—small stones, thin layer

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Pineval soil—Ive, irrigated, and VIs, nonirrigated; Orovada soil—Ile, irrigated, and Vlc, nonirrigated

*Range site:* Pineval and Orovada soils—028B010N; Inclusions 1 and 2—028B010N; Inclusion 3—028B003N

## **3990—Settle Meyer fine sandy loam, drained, 0 to 2 percent slopes**

*Positions on landscape:* Flood plains

### **Composition**

*Major component:*

Settle Meyer fine sandy loam, drained, 0 to 2 percent slopes—85 percent

*Contrasting inclusions:*

Xeric Torriorthents, fine-loamy, mixed, mesic, 0 to 4 percent slopes—7 percent

Xerollic Camborthids, coarse-loamy, mixed, mesic, 2 to 8 percent slopes—7 percent

Settle Meyer fine sandy loam, frequently flooded, 0 to 2 percent slopes—1 percent

### **Characteristics of the Settle Meyer Soil**

*Classification:* Fluvaquentic Haplaquolls, fine-loamy, mixed, mesic

*Positions on landscape:* Flood plains

*Parent material:* Mixed alluvium

*Slope:* 0 to 2 percent

*Elevation:* 5,100 to 6,300 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Basin wildrye, basin big sagebrush

### **Typical Profile**

*Depth:* 0 to 16 inches

*Texture:* Fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Depth:* 16 to 36 inches

*Texture:* Silty clay loam, clay loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Depth:* 36 to 60 inches

*Texture:* Stratified very gravelly loamy sand to silty clay loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 9 to 11 inches



*Water-supplying capacity:* 10 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.28; T value—5;  
wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Xeric Torriorthents, fine-loamy, mixed, mesic

*Positions on landscape:* Adjacent to stream channel banks

*Distinctive present vegetation:* Basin big sagebrush, Wyoming big sagebrush, black greasewood

#### **Inclusion 2**

*Classification:* Xerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Fanlettes extending from adjacent fan piedmonts

*Distinctive present vegetation:* Wyoming big sagebrush

#### **Inclusion 3**

*Classification:* Fluvaquentic Haplaquolls, fine-loamy, mixed, mesic

*Positions on landscape:* Concave to smooth, long and narrow flood plains

*Distinctive present vegetation:* Sedge, rush, bluegrass

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

*Range seeding:* Good

*Roadfill:* Good

*Topsoil:* Fair—too clayey, small stones, area reclaim

*Daily cover for landfill:* Fair—too clayey, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave

*Local roads and streets:* Severe—low strength

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Settlemeier soil—IIIc, irrigated, and VIc, nonirrigated

*Range site:* Settlemeier soil—028B003N; Inclusion 1—024X006N; Inclusion 2—024X005N; Inclusion 3—025X001N

## **3991—Settlemeier-Pineval association**

*Positions on landscape:* Inset fans, fan skirts

### **Composition**

*Major components:*

Settlemeier loam, drained, 2 to 4 percent slopes—70 percent

Pineval gravelly loam, 2 to 8 percent slopes—15 percent

*Contrasting inclusions:*

Xerollic Camborthids, fine-loamy, mixed, mesic, 2 to 8 percent slopes—8 percent

Xerollic Camborthids, coarse-loamy, mixed, mesic, 2 to 8 percent slopes—5 percent

Typic Camborthids, fine-silty, mixed, mesic, 2 to 8 percent slopes—2 percent

### **Characteristics of the Settlemeier Soil**

*Classification:* Fluvaquentic Haplaquolls, fine-loamy, mixed, mesic

*Positions on landscape:* Inset fans

*Parent material:* Mixed alluvium

*Slope:* 2 to 4 percent

*Elevation:* 5,400 to 6,300 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Basin wildrye, basin big sagebrush

### **Typical Profile**

*Depth:* 0 to 16 inches

*Texture:* Loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Depth:* 16 to 36 inches

*Texture:* Silty clay loam, clay loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Depth:* 36 to 60 inches

*Texture:* Stratified very gravelly loamy sand to silty clay loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* Rare  
*Permeability:* Moderately slow  
*Available water capacity:* 9 to 11 inches  
*Water-supplying capacity:* 11 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.37; T value—5; wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

**Characteristics of the Pineval Soil**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Fan skirts adjacent to inset fans  
*Parent material:* Mixed alluvium  
*Slope:* 2 to 8 percent  
*Elevation:* 5,400 to 6,500 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

**Typical Profile**

*Rock fragments on surface:* 40 percent pebbles  
*Depth:* 0 to 5 inches  
*Texture:* Gravelly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 5 to 11 inches  
*Texture:* Very gravelly loam, very gravelly clay loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 11 to 60 inches  
*Texture:* Extremely gravelly sandy loam, extremely gravelly loamy sand  
*Structure:* Single grain  
*Consistence:* Loose  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* Rare  
*Permeability:* Moderately slow  
*Available water capacity:* 3.2 to 4.4 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Medium  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.28; T value—5; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

**Contrasting Inclusions****Inclusion 1**

*Classification:* Xerollic Camborthids, fine-loamy, mixed, mesic  
*Positions on landscape:* Inset fan remnants  
*Distinctive present vegetation:* Black greasewood, basin big sagebrush

**Inclusion 2**

*Classification:* Xerollic Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Gullied parts of inset fan remnants  
*Distinctive present vegetation:* Spiny hopsage, Wyoming big sagebrush

**Inclusion 3**

*Classification:* Typic Camborthids, fine-silty, mixed, mesic  
*Positions on landscape:* The lower parts of inset fan remnants  
*Distinctive present vegetation:* Black greasewood, rubber rabbitbrush, inland saltgrass

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements****Settlemeier Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

**Pineval Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses****Settlemeier Soil**

*Range seeding:* Good  
*Roadfill:* Good

*Topsoil:* Fair—too clayey, area reclaim  
*Daily cover for landfill:* Fair—too clayey, too sandy, small stones

*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Severe—low strength  
*Pond reservoir areas:* Moderate—seepage, slope  
*Embankments, dikes, and levees:* Severe—piping  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Pineval Soil**

*Range seeding:* Fair—too arid  
*Roadfill:* Good  
*Topsoil:* Poor—small stones, area reclaim  
*Daily cover for landfill:* Poor—seepage, too sandy, small stones  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Moderate—frost action, flooding  
*Pond reservoir areas:* Moderate—seepage, slope  
*Embankments, dikes, and levees:* Severe—seepage  
*Sand:* Probable source  
*Gravel:* Probable source

#### **Interpretive Groups**

*Land capability classification:* Settlemyer soil—IIIc, irrigated, and VIc, nonirrigated; Pineval soil—IVe, irrigated, and VIs, nonirrigated  
*Range site:* Settlemyer soil—028B003N; Pineval soil—028B010N; Inclusion 1—024X022N; Inclusion 2—028B052N; Inclusion 3—028B004N

### **3992—Settlemyer complex**

*Positions on landscape:* Intermountain drainageways

#### **Composition**

*Major components:*  
 Settlemyer loam, drained, 2 to 4 percent slopes—65 percent  
 Settlemyer loam, frequently flooded, 0 to 2 percent slopes—20 percent  
*Contrasting inclusions:*  
 Xerollic Haplargids, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—9 percent  
 Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 0 to 4 percent slopes—6 percent

#### **Characteristics of the Settlemyer Soil, Drained**

*Classification:* Fluvaquent Haplaquolls, fine-loamy, mixed, mesic  
*Positions on landscape:* Concave, entrenched inset fans and flood plains of intermountain drainageways  
*Parent material:* Mixed alluvium  
*Slope:* 2 to 4 percent  
*Elevation:* 5,200 to 6,300 feet

*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 45 degrees F  
*Frost-free season:* About 100 days  
*Dominant present vegetation:* Thurber needlegrass, bluebunch wheatgrass, Wyoming big sagebrush

#### **Typical Profile**

*Depth:* 0 to 16 inches  
*Texture:* Loam  
*Structure:* Platy  
*Consistence:* Slightly hard, friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 16 to 40 inches  
*Texture:* Silty clay loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 40 to 60 inches  
*Texture:* Fine sandy loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

#### **Soil and Water Features**

*Depth to a seasonal high water table:* 36 to 48 inches  
*Frequency of flooding:* Rare  
*Permeability:* Moderately slow  
*Available water capacity:* 9.4 to 11.0 inches  
*Water-supplying capacity:* 10 inches  
*Runoff:* Slow  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.37; T value—5; wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* High

#### **Characteristics of the Settlemyer Soil, Frequently Flooded**

*Classification:* Fluvaquent Haplaquolls, fine-loamy, mixed, mesic  
*Positions on landscape:* Undissected parts of flood plains  
*Parent material:* Mixed alluvium  
*Slope:* 0 to 2 percent  
*Elevation:* 5,200 to 6,300 feet  
*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 45 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Basin wildrye, western wheatgrass, basin big sagebrush

### **Typical Profile**

*Depth:* 0 to 15 inches

*Texture:* Loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 15 to 35 inches

*Texture:* Silty clay loam, clay loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 10

*Depth:* 35 to 60 inches

*Texture:* Stratified very gravelly loamy sand to silty clay loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 10

### **Soil and Water Features**

*Depth to a seasonal high water table:* 12 to 36 inches

*Frequency of flooding:* Frequent for brief periods in December through March

*Permeability:* Moderately slow

*Available water capacity:* 8 to 10 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Slow

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* High

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Xerollic Haplargids, loamy-skeletal, mixed, mesic

*Positions on landscape:* Fanlettes extending from the front of adjacent mountains, along the outer margin of drainageways

*Distinctive present vegetation:* Wyoming big sagebrush, bluegrass

#### **Inclusion 2**

*Classification:* Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic

*Positions on landscape:* Adjacent to stream channels

*Distinctive present vegetation:* Basin wildrye, basin big sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Settemeyer Soil, Drained**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Settemeyer Soil, Frequently Flooded**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Settemeyer Soil, Drained**

*Range seeding:* Good

*Roadfill:* Poor—low strength

*Topsoil:* Fair—small stones

*Daily cover for landfill:* Fair—too clayey, wetness

*Shallow excavations:* Moderate—wetness

*Local roads and streets:* Severe—low strength, frost action

*Pond reservoir areas:* Moderate—slope

*Embankments, dikes, and levees:* Moderate—wetness

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Settemeyer Soil, Frequently Flooded**

*Range seeding:* Fair—excess salt

*Roadfill:* Fair—wetness

*Topsoil:* Fair—too clayey, small stones, area reclaim

*Daily cover for landfill:* Poor—wetness

*Shallow excavations:* Severe—cutbanks cave, wetness

*Local roads and streets:* Severe—low strength, flooding, frost action

*Pond reservoir areas:* Moderate—seepage

*Embankments, dikes, and levees:* Severe—piping, wetness

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Settemeyer soil, drained—I<sub>1</sub>w, irrigated, and V<sub>1</sub>w, nonirrigated; Settemeyer soil, frequently flooded—III<sub>1</sub>w, irrigated, and V<sub>1</sub>w, nonirrigated

*Range site:* Settemeyer soil, drained—025X003N; Settemeyer soil, frequently flooded—025X001N; Inclusion 1—024X005N; Inclusion 2—024X006N

**4041—Hymas-Xine-Attella association***Positions on landscape:* Mountains**Composition***Major components:*

Hymas gravelly loam, 30 to 50 percent slopes—35 percent

Xine gravelly loam, 30 to 50 percent slopes—30 percent

Attella very gravelly loam, 30 to 50 percent slopes—20 percent

*Contrasting inclusions:*

Aridic Calcixerolls, loamy-skeletal, carbonatic, frigid, 30 to 50 percent slopes—7 percent

Aridic Calcixerolls, loamy-skeletal, carbonatic, frigid, 15 to 50 percent slopes—3 percent

Rock outcrop—3 percent

Welch clay loam, drained, 0 to 4 percent slopes—2 percent

**Characteristics of the Hymas Soil***Classification:* Lithic Haploxerolls, loamy-skeletal, carbonatic, frigid*Positions on landscape:* Convex, east- and west-facing side slopes of mountains*Parent material:* Residuum and colluvium derived from limestone*Slope:* 30 to 50 percent*Elevation:* 6,300 to 7,800 feet*Average annual precipitation:* About 14 inches*Average annual air temperature:* About 45 degrees F*Frost-free season:* About 80 days*Dominant present vegetation:* Singleleaf pinyon, bluebunch wheatgrass, mountain big sagebrush, Utah juniper*Site index for common trees:* Singleleaf pinyon—40; Utah juniper—40**Typical Profile***Rock fragments on surface:* 5 percent cobbles, 20 percent pebbles*Depth:* 0 to 9 inches*Texture:* Gravelly loam*Structure:* Granular*Consistence:* Soft, friable*Reaction:* Moderately alkaline*Depth:* 9 to 15 inches*Texture:* Very cobbly loam*Structure:* Massive*Consistence:* Slightly hard, friable*Reaction:* Moderately alkaline*Depth:* 15 inches*Kind of material:* Unweathered bedrock**Soil and Water Features***Depth to bedrock:* 10 to 20 inches*Depth to a seasonal high water table:* More than 60 inches*Frequency of flooding:* None*Permeability:* Moderate*Available water capacity:* 1.0 to 2.8 inches*Water-supplying capacity:* 11 inches*Runoff:* Rapid*Hydrologic group:* D*Erosion factors (upper layer):* K value—0.28; T value—1; wind erodibility group—6*Hazard of erosion:* By water—severe; by wind—slight*Shrink-swell potential:* Low*Corrosivity:* To steel—moderate; to concrete—low*Potential for frost action:* Moderate**Characteristics of the Xine Soil***Classification:* Aridic Calcixerolls, loamy-skeletal, mixed, frigid*Positions on landscape:* Concave, north-facing side slopes of mountains*Parent material:* Residuum derived from limestone*Slope:* 30 to 50 percent*Elevation:* 6,300 to 7,800 feet*Average annual precipitation:* About 14 inches*Average annual air temperature:* About 44 degrees F*Frost-free season:* About 80 days*Dominant present vegetation:* Mountain big sagebrush, bluebunch wheatgrass, bluegrass, snowberry**Typical Profile***Rock fragments on surface:* 15 percent pebbles*Depth:* 0 to 10 inches*Texture:* Gravelly loam*Structure:* Granular*Consistence:* Soft, very friable*Reaction:* Mildly alkaline*Depth:* 10 to 33 inches*Texture:* Very cobbly loam, very cobbly sandy loam*Structure:* Massive*Consistence:* Soft, very friable*Reaction:* Moderately alkaline*Depth:* 33 inches*Kind of material:* Weathered bedrock**Soil and Water Features***Depth to bedrock:* 20 to 40 inches*Depth to a seasonal high water table:* More than 60 inches*Frequency of flooding:* None*Permeability:* Moderately rapid*Available water capacity:* 2 to 4 inches

*Water-supplying capacity:* 12 inches

*Runoff:* Rapid

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.24; T value—2;  
wind erodibility group—6

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Attella Soil**

*Classification:* Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), frigid

*Positions on landscape:* Slightly rilled, south-facing side slopes and crests of mountains

*Parent material:* Residuum derived from dolostone

*Slope:* 30 to 50 percent

*Elevation:* 6,300 to 7,800 feet

*Average annual precipitation:* About 12 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 90 days

*Dominant present vegetation:* Singleleaf pinyon,  
mountain big sagebrush, bluegrass

*Site index for common trees:* Singleleaf pinyon—40;  
Utah juniper—40

### **Typical Profile**

*Rock fragments on surface:* 5 percent flagstones, 80 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Moderately alkaline

*Depth:* 3 to 7 inches

*Texture:* Very gravelly loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Depth:* 7 inches

*Kind of material:* Unweathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 6 to 10 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 0.7 to 1.5 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.15; T value—1;  
wind erodibility group—7

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Aridic Calcixerolls, loamy-skeletal, carbonatic, frigid

*Positions on landscape:* The lower, south-facing side slopes of mountains

*Distinctive present vegetation:* Bluebunch wheatgrass, mountain big sagebrush

#### **Inclusion 2**

*Classification:* Aridic Calcixerolls, loamy-skeletal, carbonatic, frigid

*Positions on landscape:* Convex, rounded, highest, east- and west-facing side slopes of mountains

*Distinctive present vegetation:* Black sagebrush, bluebunch wheatgrass

#### **Inclusion 3**

*Positions on landscape:* Scattered peaks and bedding planes

*Distinctive present vegetation:* None

#### **Inclusion 4**

*Classification:* Cumulic Haplaquolls, fine-loamy, mixed, frigid

*Positions on landscape:* Intermountain drainageways

*Distinctive present vegetation:* Basin wildrye, basin big sagebrush

### **Major Uses**

*Current uses:* Livestock grazing, wildlife habitat

*Potential foreseeable use:* Cordwood production

### **Suitability for Wildlife Habitat Elements**

#### **Hymas Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Coniferous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Fair

#### **Xine Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Attella Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Coniferous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

### **Suitability and Limitations for Selected Uses**

#### **Hymas Soil**

*Range seeding:* Poor—erodes easily, droughty

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—depth to rock, large stones, slope

*Daily cover for landfill:* Poor—depth to rock, large stones, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines, large stones

*Gravel:* Improbable source—excess fines, large stones

### **Xine Soil**

*Range seeding:* Poor—erodes easily

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—small stones, slope

*Daily cover for landfill:* Poor—depth to rock, large stones, slope

*Shallow excavations:* Severe—slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—seepage, slope

*Embankments, dikes, and levees:* Severe—large stones

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Attella Soil**

*Range seeding:* Poor—droughty, depth to rock, small stones

*Roadfill:* Poor—depth to rock, slope

*Topsoil:* Poor—depth to rock, small stones, slope

*Daily cover for landfill:* Poor—depth to rock, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—depth to rock, slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Hymas and Xine soils—Vlle, nonirrigated; Attella soil—Vlls, nonirrigated

*Range site:* Hymas and Attella soils—025X062N; Xine soil—024X021N; Inclusion 1—024X029N; Inclusion 2—024X031N; Inclusion 3—none; Inclusion 4—028B024N

## **4070—Genaw-Wieland-Grina association**

*Positions on landscape:* Hills, fan piedmonts

### **Composition**

*Major components:*

Genaw gravelly loam, 15 to 30 percent slopes—35 percent

Wieland gravelly loam, 4 to 15 percent slopes—30 percent

Grina very gravelly loam, eroded, 15 to 30 percent slopes—20 percent

*Contrasting inclusions:*

Durixerollic Camborthids, fine-loamy, mixed, mesic, 2 to 8 percent slopes—8 percent

Typic Natrargids, fine, montmorillonitic, mesic, 8 to 15 percent slopes—4 percent

Durixerollic Camborthids, fine-loamy, mixed, mesic, 2 to 4 percent slopes—3 percent

### **Characteristics of the Genaw Soil**

*Classification:* Xerollic Haplargids, loamy, mixed, mesic, shallow

*Positions on landscape:* Convex side slopes of hills

*Parent material:* Loess mantle over residuum derived from tuffaceous sediment

*Slope:* 15 to 30 percent

*Elevation:* 5,700 to 6,000 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 25 percent pebbles

*Depth:* 0 to 6 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 11 inches

*Texture:* Gravelly loam, gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 11 to 16 inches

*Texture:* Very gravelly loam

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 16 inches

*Kind of material:* Weathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 1.9 to 3.0 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Wieland Soil**

*Classification:* Durixerollic Haplargids, fine, montmorillonitic, mesic

*Positions on landscape:* Summits of fan piedmont remnants over low hills

*Parent material:* Mixed alluvium that includes loess and volcanic ash

*Slope:* 4 to 15 percent

*Elevation:* 5,700 to 6,000 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Indian ricegrass, needlegrass, Wyoming big sagebrush

### **Typical Profile**

*Rock fragments on surface:* 20 percent pebbles

*Depth:* 0 to 8 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 8 to 20 inches

*Texture:* Gravelly clay

*Structure:* Prismatic

*Consistence:* Hard, firm

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 20 to 60 inches

*Texture:* Gravelly loam, gravelly sandy loam

*Structure:* Massive

*Consistence:* Hard, firm

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 6 to 9 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Medium

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.32; T value—5; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

### **Characteristics of the Grina Soil**

*Classification:* Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow

*Positions on landscape:* Eroded hills along the edge of fan piedmont remnants

*Parent material:* Residuum derived from sedimentary rock

*Slope:* 15 to 30 percent

*Elevation:* 5,700 to 6,000 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, Wyoming big sagebrush, Utah juniper, black sagebrush

*Site index for Utah juniper:* 18

### **Typical Profile**

*Rock fragments on surface:* 55 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 3 to 14 inches

*Texture:* Silt loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 14 inches

*Kind of material:* Weathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.7 to 2.8 inches

*Water-supplying capacity:* 6 inches

*Runoff:* Rapid

*Hydrologic group:* D



*Erosion factors (upper layer):* K value—0.15; T value—1;  
wind erodibility group—6  
*Hazard of erosion:* By water—moderate; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Durixerollic Camborthids, fine-loamy,  
mixed, mesic  
*Positions on landscape:* Inset fans  
*Distinctive present vegetation:* Basin big sagebrush,  
basin wildrye

#### **Inclusion 2**

*Classification:* Typic Natrargids, fine, montmorillonitic,  
mesic  
*Positions on landscape:* Concave side slopes of hills  
*Distinctive present vegetation:* Small rabbitbrush,  
shadscale, Wyoming big sagebrush

#### **Inclusion 3**

*Classification:* Durixerollic Camborthids, fine-loamy,  
mixed, mesic  
*Positions on landscape:* The lower inset fans  
*Distinctive present vegetation:* Basin big sagebrush,  
black greasewood, basin wildrye

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Genaw Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### **Wieland Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### **Grina Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Coniferous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Fair

### **Suitability and Limitations for Selected Uses**

#### **Genaw Soil**

*Range seeding:* Poor—droughty  
*Roadfill:* Poor—depth to rock  
*Topsoil:* Poor—depth to rock, small stones, slope  
*Daily cover for landfill:* Poor—depth to rock, small  
stones, slope  
*Shallow excavations:* Severe—depth to rock, slope  
*Local roads and streets:* Severe—slope  
*Pond reservoir areas:* Severe—depth to rock, slope  
*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Wieland Soil**

*Range seeding:* Poor—rooting depth  
*Roadfill:* Good  
*Topsoil:* Poor—small stones, area reclaim  
*Daily cover for landfill:* Poor—small stones  
*Shallow excavations:* Moderate—too clayey, slope  
*Local roads and streets:* Severe—low strength, shrink-  
swell

*Pond reservoir areas:* Severe—slope  
*Embankments, dikes, and levees:* Moderate—thin layer  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Grina Soil**

*Range seeding:* Poor—droughty, small stones  
*Roadfill:* Poor—depth to rock, low strength, slope  
*Topsoil:* Poor—depth to rock, small stones, slope  
*Daily cover for landfill:* Poor—depth to rock, slope  
*Shallow excavations:* Severe—depth to rock, slope  
*Local roads and streets:* Severe—low strength, slope  
*Pond reservoir areas:* Severe—depth to rock, slope  
*Embankments, dikes, and levees:* Severe—thin layer  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Genaw soil—VIIe,  
nonirrigated; Wieland soil—VIs, nonirrigated; Grina  
soil—VIIs, nonirrigated

*Range site:* Genaw and Wieland soils—024X005N;  
Grina soil—025X059N; Inclusion 1—025X003N;  
Inclusion 2—024X045N; Inclusion 3—024X006N

### **4072—Genaw-Orovada-Puett association**

*Positions on landscape:* Rolling hills

### **Composition**

#### **Major components:**

Genaw very fine sandy loam, 4 to 15 percent slopes—  
40 percent  
Orovada fine sandy loam, 2 to 8 percent slopes—30  
percent  
Puett fine sandy loam, 15 to 30 percent slopes—15  
percent

#### **Contrasting inclusions:**

Xeric Torriorthents, loamy, mixed (calcareous), mesic,  
shallow, 15 to 50 percent slopes—6 percent  
Xerollic Haplargids, loamy-skeletal, mixed, mesic,  
shallow, 15 to 50 percent slopes—5 percent  
Xeric Torriorthents, sandy, mixed, mesic, 4 to 15  
percent slopes—4 percent

**Characteristics of the Genaw Soil**

*Classification:* Xerollic Haplargids, loamy, mixed, mesic, shallow

*Positions on landscape:* Summits and shoulder slopes of hills

*Parent material:* Loess mantle over residuum derived from tuffaceous sediment

*Slope:* 4 to 15 percent

*Elevation:* 5,600 to 6,000 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, Wyoming big sagebrush

**Typical Profile**

*Rock fragments on surface:* 25 percent pebbles

*Depth:* 0 to 6 inches

*Texture:* Very fine sandy loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 11 inches

*Texture:* Gravelly loam, gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 11 to 16 inches

*Texture:* Very gravelly loam

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 16 inches

*Kind of material:* Weathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 1.9 to 2.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Rapid

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.49; T value—1; wind erodibility group—3

*Hazard of erosion:* By water—moderate; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

**Characteristics of the Orovada Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Inset fans

*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium

*Slope:* 2 to 8 percent

*Elevation:* 5,600 to 6,000 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

**Typical Profile**

*Depth:* 0 to 8 inches

*Texture:* Fine sandy loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 8 to 20 inches

*Texture:* Fine sandy loam, loam

*Structure:* Subangular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 20 to 60 inches

*Texture:* Stratified fine sandy loam to silt loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Rare

*Permeability:* Moderate

*Available water capacity:* 8.4 to 9.6 inches

*Water-supplying capacity:* 4 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

### **Characteristics of the Puett Soil**

*Classification:* Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow  
*Positions on landscape:* Convex side slopes of hills  
*Parent material:* Residuum derived from tuff and sandstone  
*Slope:* 15 to 30 percent  
*Elevation:* 5,600 to 6,000 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bluegrass, Wyoming big sagebrush, Indian ricegrass, black sagebrush

### **Typical Profile**

*Rock fragments on surface:* 5 percent pebbles  
*Depth:* 0 to 4 inches  
*Texture:* Fine sandy loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Moderately alkaline  
*Depth:* 4 to 15 inches  
*Texture:* Coarse sandy loam, sandy loam  
*Structure:* Massive  
*Consistence:* Soft, friable  
*Reaction:* Moderately alkaline  
*Depth:* 15 inches  
*Kind of material:* Weathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately rapid  
*Available water capacity:* 1.3 to 3.0 inches  
*Water-supplying capacity:* 6 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.28; T value—1; wind erodibility group—3  
*Hazard of erosion:* By water—severe; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow

*Positions on landscape:* Convex, eroded side slopes of hills

*Distinctive present vegetation:* Wyoming big sagebrush, purple sage, Indian ricegrass

#### **Inclusion 2**

*Classification:* Xerollic Haplargids, loamy-skeletal, mixed, mesic, shallow

*Positions on landscape:* Concave side slopes of hills

*Distinctive present vegetation:* Black sagebrush, rabbitbrush, bluegrass

#### **Inclusion 3**

*Classification:* Xeric Torriorthents, sandy, mixed, mesic

*Positions on landscape:* Sand dunes along the lower margin of hills

*Distinctive present vegetation:* Spiny hopsage, Wyoming big sagebrush, needleandthread

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Genaw Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Orovada Soil**

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

#### **Puett Soil**

*Wild herbaceous plants (nonirrigated):* Poor

*Shrubs (nonirrigated):* Poor

### **Suitability and Limitations for Selected Uses**

#### **Genaw Soil**

*Range seeding:* Poor—droughty

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, small stones

*Daily cover for landfill:* Poor—depth to rock, small stones

*Shallow excavations:* Severe—depth to rock

*Local roads and streets:* Moderate—slope, depth to rock, frost action

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—thin layer

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Orovada Soil**

*Range seeding:* Fair—too arid

*Roadfill:* Good

*Topsoil:* Fair—small stones, thin layer

*Daily cover for landfill:* Good

*Shallow excavations:* Slight

*Local roads and streets:* Moderate—frost action

*Pond reservoir areas:* Moderate—seepage, slope

*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Puett Soil**

*Range seeding:* Poor—droughty, erodes easily

*Roadfill:* Poor—depth to rock

*Topsoil:* Poor—depth to rock, slope

*Daily cover for landfill:* Poor—depth to rock, slope

*Shallow excavations:* Severe—depth to rock, slope

*Local roads and streets:* Severe—slope

*Pond reservoir areas:* Severe—depth to rock, slope

*Embankments, dikes, and levees:* Severe—seepage, piping

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

#### **Interpretive Groups**

*Land capability classification:* Genaw soil—VII<sub>s</sub>, nonirrigated; Orovada soil—III<sub>e</sub>, irrigated, and VI<sub>c</sub>, nonirrigated; Puett soil—VII<sub>e</sub>, nonirrigated

*Range site:* Genaw and Orovada soils—028B010N; Puett soil—025X025N; Inclusion 1—024X045N; Inclusion 2—024X030N; Inclusion 3—024X017N

### **4073—Genaw-Broyles-Perlor association**

*Positions on landscape:* Low, rolling hills

#### **Composition**

*Major components:*

Genaw gravelly loam, 4 to 8 percent slopes—30 percent

Broyles gravelly very fine sandy loam, 4 to 8 percent slopes—30 percent

Perlor fine sandy loam, 8 to 15 percent slopes—25 percent

*Contrasting inclusions:*

Xerollic Haplargids, loamy, mixed, mesic, shallow, 0 to 2 percent slopes—7 percent

Xerollic Camborthids, loamy, mixed, mesic, shallow, 15 to 30 percent slopes—4 percent

Duric Camborthids, coarse-loamy, mixed, mesic, 2 to 4 percent slopes—4 percent

#### **Characteristics of the Genaw Soil**

*Classification:* Xerollic Haplargids, loamy, mixed, mesic, shallow

*Positions on landscape:* Summits and side slopes of hills

*Parent material:* Loess mantle over residuum derived from tuffaceous sediment

*Slope:* 4 to 8 percent

*Elevation:* 5,600 to 6,000 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, Wyoming big sagebrush, spiny hopsage

#### **Typical Profile**

*Rock fragments on surface:* 25 percent pebbles

*Depth:* 0 to 6 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 11 inches

*Texture:* Gravelly loam, gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 11 to 16 inches

*Texture:* Very gravelly loam

*Structure:* Massive

*Consistence:* Hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 16 inches

*Kind of material:* Weathered bedrock

#### **Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 1.9 to 2.4 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

#### **Characteristics of the Broyles Soil**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Inset fans

*Parent material:* Thin loess mantle over mixed alluvium

*Slope:* 4 to 8 percent

*Elevation:* 5,600 to 6,000 feet  
*Average annual precipitation:* About 7 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bluegrass

### **Typical Profile**

*Rock fragments on surface:* 25 percent pebbles  
*Depth:* 0 to 13 inches  
*Texture:* Gravelly very fine sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 5 to 13

*Depth:* 13 to 60 inches  
*Texture:* Stratified loam to gravelly loamy sand  
*Structure:* Massive  
*Consistence:* Hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46

### **Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately rapid  
*Available water capacity:* 6.2 to 7.4 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.32; T value—5; wind erodibility group—4  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—moderate  
*Potential for frost action:* Low

### **Characteristics of the Perlor Soil**

*Classification:* Typic Torriorthents, loamy, mixed (calcareous), mesic, shallow  
*Positions on landscape:* South-facing side slopes of hills  
*Parent material:* Loess cap over residuum derived from tuffaceous sediment  
*Slope:* 8 to 15 percent  
*Elevation:* 5,600 to 6,000 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 47 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Indian ricegrass, bluegrass, shadscale, bud sagebrush

### **Typical Profile**

*Rock fragments on surface:* 10 percent pebbles  
*Depth:* 0 to 7 inches  
*Texture:* Fine sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 4  
*Depth:* 7 to 14 inches  
*Texture:* Loam, sandy loam, gravelly sandy loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

*Depth:* 14 inches  
*Kind of material:* Weathered bedrock

### **Soil and Water Features**

*Depth to bedrock:* 10 to 14 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 1.6 to 2.3 inches  
*Water-supplying capacity:* 6 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.32; T value—1; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

### **Contrasting Inclusions**

#### **Inclusion 1**

*Classification:* Xerollic Haplargids, loamy, mixed, mesic, shallow  
*Positions on landscape:* Summits of hills  
*Distinctive present vegetation:* Wyoming big sagebrush, spiny hopsage

#### **Inclusion 2**

*Classification:* Xerollic Camborthids, loamy, mixed, mesic, shallow  
*Positions on landscape:* The lower, south-facing side slopes of hills  
*Distinctive present vegetation:* Wyoming big sagebrush, galleta, Indian ricegrass

#### **Inclusion 3**

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* The lower parts of inset fans  
*Distinctive present vegetation:* Black greasewood, shadscale, bud sagebrush

### **Major Current Uses**

Livestock grazing, wildlife habitat

### **Suitability for Wildlife Habitat Elements**

#### **Genaw Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

#### **Broyles Soil**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor

#### **Perlor Soil**

*Wild herbaceous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Poor

### **Suitability and Limitations for Selected Uses**

#### **Genaw Soil**

*Range seeding:* Poor—droughty  
*Roadfill:* Poor—depth to rock  
*Topsoil:* Poor—depth to rock, small stones  
*Daily cover for landfill:* Poor—depth to rock, small stones  
*Shallow excavations:* Severe—depth to rock  
*Local roads and streets:* Moderate—depth to rock, frost action  
*Pond reservoir areas:* Severe—depth to rock  
*Embankments, dikes, and levees:* Severe—thin layer  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Broyles Soil**

*Range seeding:* Poor—too arid, excess salt  
*Roadfill:* Good  
*Topsoil:* Poor—small stones, excess salt  
*Daily cover for landfill:* Fair—too sandy, small stones  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Slight  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—piping, excess salt  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

#### **Perlor Soil**

*Range seeding:* Poor—too arid, droughty  
*Roadfill:* Poor—depth to rock  
*Topsoil:* Poor—depth to rock, small stones  
*Daily cover for landfill:* Poor—depth to rock  
*Shallow excavations:* Severe—depth to rock  
*Local roads and streets:* Moderate—depth to rock, slope  
*Pond reservoir areas:* Severe—depth to rock, slope  
*Embankments, dikes, and levees:* Severe—piping

*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

### **Interpretive Groups**

*Land capability classification:* Genaw and Perlor soils—VIIIs, nonirrigated; Broyles soil—IIIe, irrigated, and VIIc, nonirrigated

*Range site:* Genaw soil—024X020N; Broyles and Perlor soils—024X002N; Inclusion 1—024X020N; Inclusion 2—024X045N; Inclusion 3—024X003N

## **4140—Welch loam, drained, 2 to 8 percent slopes**

*Positions on landscape:* Intermountain drainageways

### **Composition**

*Major component:*

Welch loam, drained, 2 to 8 percent slopes—90 percent

*Contrasting inclusions:*

Cumulic Haploxerolls, fine-loamy, mixed, frigid, 2 to 8 percent slopes—6 percent

Welch loam, 2 to 8 percent slopes—4 percent

### **Characteristics of the Welch Soil**

*Classification:* Cumulic Haplaquolls, fine-loamy, mixed, frigid

*Positions on landscape:* Inset fans in narrow mountain drainageways

*Parent material:* Mixed alluvium

*Slope:* 2 to 8 percent

*Elevation:* 6,500 to 8,200 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Basin wildrye, basin big sagebrush, wheatgrass, bluegrass

### **Typical Profile**

*Depth:* 0 to 4 inches

*Texture:* Loam

*Structure:* Subangular blocky

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 4 to 60 inches

*Texture:* Stratified sandy loam to silty clay loam

*Structure:* Massive

*Consistence:* Slightly hard, friable

*Reaction:* Mildly alkaline

### **Soil and Water Features**

*Depth to a seasonal high water table:* 48 to 72 inches

*Frequency of flooding:* Rare

*Permeability:* Moderately slow

*Available water capacity:* 9.5 to 12.0 inches  
*Water-supplying capacity:* 14 inches  
*Runoff:* Very slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.32; T value—5;  
     wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* High

### ***Contrasting Inclusions***

#### ***Inclusion 1***

*Classification:* Cumulic Haploxerolls, fine-loamy, mixed, frigid

*Positions on landscape:* Concave side slopes adjacent to channels

*Distinctive present vegetation:* Aspen, willow, rose, sedge, basin big sagebrush, basin wildrye

#### ***Inclusion 2***

*Classification:* Cumulic Haplaquolls, fine-loamy, mixed, frigid

*Positions on landscape:* Adjacent to seeps, springs, and unchanneled streambeds

*Distinctive present vegetation:* Iris, sedge, bluegrass, alpine timothy, hairgrass, rush

### ***Major Current Uses***

Livestock grazing, wildlife habitat

### ***Suitability for Wildlife Habitat Elements***

*Wild herbaceous plants (nonirrigated):* Fair

*Shrubs (nonirrigated):* Fair

*Wetland plants:* Poor

*Shallow water areas:* Very poor

### ***Suitability and Limitations for Selected Uses***

*Range seeding:* Good

*Roadfill:* Poor—low strength

*Topsoil:* Fair—small stones

*Daily cover for landfill:* Fair—too clayey

*Shallow excavations:* Moderate—wetness

*Local roads and streets:* Severe—low strength, frost action

*Pond reservoir areas:* Moderate—slope

*Embankments, dikes, and levees:* Slight

*Sand:* Improbable source—excess fines

*Gravel:* Improbable source—excess fines

### ***Interpretive Groups***

*Land capability classification:* Welch soil—IIIw, irrigated; VIw, nonirrigated

*Range site:* Welch soil—025X003N; Inclusion 1—028B025N; Inclusion 2—025X005N

# Prime Farmland

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Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is the land that is best suited to food, seed, forage, fiber, and oilseed crops. It may be cultivated land, pasture, woodland, or other land, but it is not urban or built-up land or water areas. It either is used for food or fiber crops or is available for those crops. The soil qualities, growing season, and moisture supply are those needed for a well managed soil to produce a sustained high yield of crops in an economic manner. Prime farmland produces the highest yields with minimal expenditure of energy and economic resources, and farming it results in the least damage to the environment.

Prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The level of acidity or alkalinity is acceptable. Prime farmland has few or no rocks and is permeable to water and air. It is not excessively erodible or saturated with water for long periods and is not frequently flooded during the growing season. The slope ranges mainly from 0 to 4 percent. More detailed information about the criteria for prime farmland is available at the local office of the Soil Conservation Service.

A recent trend in land use has been the conversion of prime farmland to urban and industrial uses. The loss of prime farmland to other uses puts pressure on lands that are less productive than prime farmland.

The map units in the survey area that are listed at the end of this section meet the requirements for prime farmland in areas where an adequate and dependable supply of irrigation water is available. If only part of a unit meets the requirements for prime farmland, that

part is indicated in parentheses after the map unit name. On some of the soils, measures should be used to overcome a hazard or limitation, such as salinity, flooding, wetness, or droughtiness. The location of each map unit is shown on the detailed soil maps at the back of this publication. Soil qualities that affect use and management are described in the section "Detailed Soil Map Units." This list does not constitute a recommendation for a particular land use.

160	Batan association (Batan soil, slightly saline)
162	Batan-Kelk association (Kelk soil, occasionally flooded)
175	Beoska-Whirlo-Misad association (Whirlo soil)
180	Needle Peak-Batan-Yobe association (Needle Peak soil)
231	Broyles very fine sandy loam, 2 to 4 percent slopes
235	Broyles-Creemon association
237	Broyles-Beoska-Orovada association (Broyles soil)
249	Bubus association (Bubus soil, slightly saline)
290	Creemon silt loam, 0 to 2 percent slopes
291	Creemon-Wholan association
295	Creemon-Cren association
296	Creemon-Hessing association
297	Creemon-Rasille-Tulase association
298	Creemon-Misad association (Creemon soil)
491	Enko-Orovada association, gently sloping
492	Enko-Glyphs association
493	Enko-Orovada association, nearly level
512	Hessing-Relley association
560	Jesse Camp silt loam
632	McConnel-Orovada-Misad association (Orovada soil)
633	McConnel-Rasille-Wholan association (Rasille and Wholan soils)
635	McConnel-Rasille association (Rasille soil)
636	McConnel-Defler-Rasille association (Rasille soil)
637	McConnel-Orovada association (Orovada soil, rarely flooded)



638	McConnel-Wholan association (Wholan soil)	1682	Zineb-Orovada association (Orovada soil)
675	Filirán-Buffaran-Orovada association (Orovada soil)	2010	Glyphs-Silverado association
700	Orovada-Rasille-Wholan association	2012	Glyphs-Muni-Orovada association (Orovada soil)
701	Orovada fine sandy loam, 2 to 4 percent slopes	2015	Glyphs-Enko association (Glyphs soil)
702	Orovada-Creemon association	2021	Rotinom-Wholan association
703	Orovada fine sandy loam, 0 to 2 percent slopes	2022	Rotinom-Orovada association
704	Orovada-McConnel association (Orovada soil)	2031	Muni-Orovada-Unius association (Orovada soil)
705	Orovada-Valmy association	2081	Fenster-Jesse Camp association (Jesse Camp soil)
751	Poorcal-Lopwash association	2543	Buffaran-Spasprey-Allor association (Spasprey soil)
850	Relley silt loam, 0 to 2 percent slopes	2640	Rasille-Kelk association
854	Relley silt loam, frequently flooded, 0 to 2 percent slopes	2684	Tessfive-Perlor-Orovada association (Orovada soil)
942	Shipley silt loam, occasionally flooded, 0 to 2 percent slopes	3011	Defler-Orovada association (Orovada soil, gravelly substratum)
950	Silverado sandy loam, 0 to 2 percent slopes	3072	Allor-Orovada association, moderately sloping (Orovada soil)
1011	Stampede-Handy-Caniwe association (Caniwe soil)	3073	Allor-Kelk association
1041	Tenabo-Orovada-Buffaran association (Orovada soil)	3074	Allor-Orovada association, nearly level
1092	Tulase-Bubus-McConnel association (Bubus soil)	3270	Koyen fine sandy loam, 2 to 4 percent slopes
1146	Wendane-Sonoma-Valmy association (Valmy soil)	3310	Spasprey-Allor association
1169	Whirlo-Broyles association (Broyles soil)	3312	Spasprey-Buffaran-Orovada association (Spasprey and Orovada soils)
1173	Wholan silt loam, alkaline	3741	Kelk-Settlemyer association
1177	Wholan-Rasille association, alkaline	3964	Pineval-Orovada association (Orovada soil)
1178	Wholan-Rasille association, nonalkaline	3990	Settlemyer fine sandy loam, drained, 0 to 2 percent slopes
1287	Ricert-Orovada-Broyles association (Orovada soil)	3991	Settlemyer-Pineval association (Settlemyer soil)

# Use and Management of the Soils

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This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help avoid soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as rangeland and woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreation facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

## Crops and Pasture

The system of land capability classification used by the Soil Conservation Service is explained in this section, and general management needed for crops and pasture is suggested.

*Land capability classification* shows, in a general way, the suitability of soils for most kinds of field crops.

Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor does it consider possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for woodland, and for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit. Only class and subclass are used in this survey.

*Capability classes*, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

*Capability subclasses* are soil groups within one class. They are designated by adding a small letter, e,

w, s, or c, to the class numeral, for example, 11e. The letter e shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; w shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); s shows that the soil is limited mainly because it is shallow, droughty, or stony; and c, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by w, s, or c because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation.

Planners of management systems for individual fields or farms in the survey area should consider the detailed information given in the description of each soil under "Detailed Soil Map Units." Specific information can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

The aim of good land use is to produce the greatest amount of the most desirable crops while also protecting and improving the soil. This can be achieved by seeding plants that are well suited to the soil and by applying proper management practices that protect the soil and maintain soil tilth.

Different management is needed on diverse kinds of soil. Basic essential practices, however, apply to all cultivated soils. These practices are discussed in the following paragraphs.

**Conservation cropping system.** A conservation cropping system consists of a crop rotation and cultural and management practices that protect the soil from erosion and maintain or improve fertility and tilth. It should include perennial legumes, grass-legume mixtures, or other crops that produce large quantities of residue to compensate for crops in the rotation that produce little or no residue.

A typical cropping system used in the survey area is 8 to 10 years of alfalfa followed by 2 years of small grain. Residue from small grain is returned to the soil, and tillage is kept to a minimum.

**Erosion control.** Protection of the surface layer from water erosion and soil blowing is important because this layer contains most of the organic matter and is generally more fertile than the rest of the soil. Soil blowing can be controlled by leaving a protective plant cover on the surface, by using minimum tillage during windy or stormy periods, and by tilling in spring and then immediately seeding. Water erosion generally is controlled by leveling and by applying irrigation water at the proper rate.

**Application of plant nutrients.** Most crops in the survey area respond well to applications of liquid or solid fertilizer. Specific fertilizer requirements are based on the kind of crop grown and the nutrient level of the soil. Applications of nitrogen and phosphorus increase the production of small grain and aid in establishing alfalfa. Unless the soils contain sufficient amounts of available phosphorus, established alfalfa generally requires only applications of phosphorus, which should be applied every 2 years throughout the duration of the stand.

**Irrigation water management.** Proper irrigation water management is the application of irrigation water at rates and in amounts adequate to produce high crop yields and to minimize soil and water losses. Water is applied according to the crop needs and the characteristics of the soil.

An efficient irrigation distribution system is one that has enough capacity to meet the needs of the crops grown during periods of peak use. The system should be located and controlled so that seepage losses are minimal and so that it carries the required flow without causing erosion.

Efficient application of water involves consideration of the available water capacity, the rate at which water enters and moves through the soil, and the amount of water required by the crop grown. Most crops should be irrigated when 40 to 50 percent of the available moisture in the top half of the root zone has been used.

**Management of salt- and sodium-affected soils.** Like most soils in arid and subarid regions, many of the soils in this survey area contain at least small quantities of soluble salts and sodium. In some soils high concentrations of salts and sodium limit or prevent the growth of crops. Because precipitation is low and the rate of evaporation is high, salts accumulate in the root zone. In addition, many low-lying areas receive salty water from runoff or seepage. Surface evaporation of this water generally results in an increase in content of soluble salts on or in the soils. In some areas that have a high water table, water rises in the soil by capillary action and carries dissolved salts with it. The soluble salts can be moved to any part of the soil profile.

A soil that contains excessive amounts of soluble salts is called a saline soil. One that contains excessive amounts of exchangeable sodium is called a sodic, or alkali, soil. A soil that contains excessive amounts of both soluble salts and sodium is called a saline-sodic soil. Saline-sodic phases of several of the soils in the survey have been mapped. The map unit name in most cases does not give the degree to which these soils are affected, nor does it indicate whether they contain both salts and sodium. This information is given in the map unit descriptions.

Four classes of salinity are recognized in the detailed soil map unit descriptions. These classes are as follows:

*Nonsaline soils* are those that contain less than 0.15 percent soluble salts. The electrical conductivity of the saturation extract is less than 4 millimhos per centimeter at 25 degrees C.

*Slightly saline soils* are those that contain 0.15 to 0.35 percent soluble salts. The electrical conductivity of the saturation extract is 4 to 8 millimhos per centimeter at 25 degrees C.

*Moderately saline soils* are those that contain 0.35 to 0.65 percent soluble salts. The electrical conductivity of the saturation extract is 8 to 16 millimhos per centimeter at 25 degrees C.

*Strongly saline soils* are those that contain more than 0.65 percent soluble salts. The electrical conductivity of the saturation extract is more than 16 millimhos per centimeter at 25 degrees C.

Four classes of sodicity are recognized in the detailed soil map unit descriptions. These classes are as follows:

*Nonsodic soils* contain less than 15 percent exchangeable sodium.

*Slightly sodic soils* contain 15 to 25 percent exchangeable sodium.

*Moderately sodic soils* contain 25 to 40 percent exchangeable sodium.

*Strongly sodic soils* contain more than 40 percent exchangeable sodium.

Soils differ in the kinds of salts they contain and in the practices needed for improvement; however, some general guidelines can be given. For example, an adequate supply of good-quality water and an adequate drainage system are needed to reclaim any saline or sodic soils. Two methods of applying water are commonly used. One method is land leveling that results in flat basins in which the water can accumulate. The other method involves leveling the land to a uniform grade and then flooding between border dikes. If drainage is adequate and if large amounts of water are used, the soluble salts can be leached out of the root zone by either method. The process is more difficult if a soil contains an excessive amount of exchangeable sodium. In addition to drainage and leaching, other practices are needed to improve sodium-affected soils.

Chemical amendments used to replace sodium are gypsum and its various forms, including gypsite, anhydrite, and selenite, as well as elemental sulfur, sulfuric acid, iron sulfate, and aluminum sulfate. Any of these amendments can be used successfully, but the soils react to some faster than to others. The amount and type of amendment needed can be determined by

laboratory analysis of soil samples, which indicates the amounts of sodium that must be replaced if the soil is to be improved.

An alternative to reclamation through the use of large quantities of gypsum is the seeding of salt- and sodium-tolerant grasses. Among these are tall wheatgrass, western wheatgrass, and alta fescue. These grasses can grow in soils that have relatively high concentrations of both soluble salts and sodium.

**Proper pasture management.** Proper pasture management includes adjusting stocking rates or the season of use so that the maximum growth and survival of high-quality grasses and legumes can be achieved. A common method is to rotate grazing among several pastures. This method allows adequate regrowth in each pasture. Livestock should be excluded when the pastures are wet. Allowing livestock to graze on wet pasture results in compaction of the soil, a decrease in the water intake rate, and deterioration of soil structure. Proper irrigation management and drainage help to keep the pastures in good condition. Increased yields can be obtained by applying commercial fertilizer and barnyard manure. Weeds generally can be controlled by mowing. The droppings of manure should be spread with a drag each spring.

## Rangeland

About 98 percent of the land in the survey area is rangeland. About 75 percent of the agricultural income is derived from livestock, principally cattle. Cow-calf operations are dominant, but cow-calf-yearling operations also are common. Most of the rangeland is administered by the Bureau of Land Management. The privately owned land is mainly in the Reese River, Big Smoky, and Grass Valleys. Ranches vary in size from less than 5,000 acres to about 100,000 acres.

On some ranches the forage produced on the rangeland is supplemented by aftermath grazing on hayland and small grain stubble fields in fall. In winter the native forage generally is supplemented by hay, but some areas of winter range are in the survey area.

For each map unit suitable for use as rangeland, a table in the section "Rangeland Plants and Woodland Understory" shows the grasses, forbs, and shrubs that make up the potential native plant community on each major soil and contrasting inclusion; the common plant name and plant symbol for the characteristic vegetation; the average percent composition for each species in the potential plant community; the range site symbol; and the total annual production of vegetation in favorable, normal, and unfavorable years. A more detailed ecological description of each range site, identified by symbol, is provided in a technical guide available in the

local office of the Soil Conservation Service.

A *range site* is a distinctive kind of rangeland that produces a characteristic natural plant community that differs from natural plant communities on other range sites in kind, amount, and proportion of range plants. The relationship between soils and vegetation was established during this survey; thus, range sites generally can be determined directly from the soil map. Soil properties that affect moisture supply and plant nutrients have the greatest influence on the productivity of range plants. Soil reaction, salt content, and a seasonal high water table also are important.

*Potential production* is the amount of vegetation that can be expected to grow annually on well managed rangeland that is supporting the potential natural plant community. It includes all vegetation, whether or not it is palatable to grazing animals. It includes the current year's growth of leaves, twigs, flowers, and fruits of woody plants. It does not include the increase in stem diameter of trees and shrubs. It is expressed in pounds per acre of air-dry vegetation for favorable, normal, and unfavorable years. In a favorable year, the amount and distribution of precipitation and the temperatures make growing conditions substantially better than average. In a normal year, growing conditions are about average. In an unfavorable year, growing conditions are well below average, generally because of low available soil moisture.

Dry weight is the total annual yield per acre reduced to a common percent of air-dry moisture.

*Characteristic vegetation*—the grasses, forbs, and shrubs that make up most of the potential natural plant community on each soil—is listed by common name. The expected percentage of the total annual production is given for each species making up the characteristic vegetation. The amount that can be used as forage depends on the kinds of grazing animals, the grazing season, and the availability of forage. Many plants, trees, and shrubs are inaccessible to foraging animals.

Range management requires a knowledge of the kinds of soil and of the potential natural plant community. It also requires an evaluation of the present range condition. Range condition is determined by comparing the present plant community with the potential natural plant community on a particular range site. The more closely the existing community resembles the potential community, the better the range condition. Range condition is an ecological rating only. It does not have a specific meaning that pertains to the present plant community for a given use.

Generally, the objective in range management is to control grazing so that the plants growing on a site are about the same in kind and amount as the potential natural plant community for that site. Such management

generally results in the optimum production of vegetation, conservation of water, and control of erosion. Sometimes, however, a range condition somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

Grazing management should be at an intensity that maintains enough plant cover to protect the soil and that maintains or improves the quantity and quality of desirable vegetation. Proper management applies to all grazing animals, including livestock, game animals, and wild horses.

The most practical and efficient way to achieve good management of livestock grazing is with a planned grazing system. A good system is one in which two or more grazing units are alternately rested from grazing in a planned sequence over a period of years. The rest period should extend at least through the growing season of the key plants. Using such a system ensures that the same unit is not grazed at the same time year after year.

Planned grazing systems should be designed to fit the individual operating unit but still meet management objectives. Using livestock watering developments, fencing, salting, or constructing livestock trails can help to achieve a better distribution of grazing.

Brush management is needed when the less desirable woody species increase beyond the natural proportions for the site. It can benefit both livestock and wildlife and can reduce sedimentation and improve watershed quality.

The use of chemicals is effective in brush management. When chemicals are properly applied in a timely manner, good results can be expected. The understory should include enough desirable plant species to respond to the treatment.

Prescribed burning is also effective in brush management. It is relatively inexpensive but requires precautions. Its success requires a good understory to provide fuel, and proper timing of the burning is critical. It is not so selective as chemical treatment.

Mechanical treatment practices, such as plowing, chaining, or beating, are effective on certain sites, but the cost is high.

Range seeding may be needed when the range has deteriorated to a point where desired plant species have disappeared or as critical area treatment following wildfire. Sites to be seeded should be evaluated on the basis of the soil, climate, topography, and planned use to determine the species that are adapted and the seeding techniques that can be used.

Even though adapted species and improved techniques are applied, successful seeding in this survey area is strongly influenced by rainfall.

Precipitation fluctuates drastically from one year to the next, even in the areas that receive higher amounts of rainfall. The success of range seeding depends on the amount of moisture available during the growing season. Each soil is rated in the detailed map unit descriptions for planned range seeding. A plant cover should be maintained to prevent accelerated erosion on the soils that are poorly suited to seeding. The criteria used to develop the ratings are listed in the Appendix.

Range seeding ratings are relative ratings that suggest the number of successful seeding establishments that might be expected during a given period of years. The ratings are not intended to be a measure of the total annual yield. Productivity is dependent upon the interaction of most of the soil properties and characteristics that are considered. In addition, the number of plant species adapted to the soil decreases with decreasing soil suitability.

Successful seeding of depleted areas of rangeland in the survey area reduces the runoff rate and thus helps to control erosion. The soils that are best suited to seeding are moderately deep or deeper; receive adequate moisture and can retain it; are resistant to sheet, rill, and wind erosion; are free of salts and sodium; and have a medium textured upper layer that is relatively free of rock fragments and is resistant to crusting.

### Woodland Understory Vegetation

Understory vegetation consists of grasses, forbs, shrubs, and other plants. If well managed, some woodland can produce enough understory vegetation to support grazing of livestock or wildlife, or both, without damage to the trees.

The quantity and quality of understory vegetation vary with the kind of soil, the age and kind of trees in the canopy, the density of the canopy, and the depth and condition of the litter.

The total production of understory vegetation, indicated in the section "Rangeland Plants and Woodland Understory," includes the herbaceous plants and the leaves, twigs, and fruit of woody plants up to a height of 4.5 feet. It is expressed in pounds per acre of air-dry vegetation in favorable, normal, and unfavorable years. In a favorable year, soil moisture is above average during the optimum part of the growing season; in a normal year, soil moisture is average; and in an unfavorable year, it is below average.

### Windbreaks and Environmental Plantings

Windbreaks protect livestock, buildings, and yards from wind and snow. They also protect fruit trees and

gardens, and they furnish habitat for wildlife. Several rows of low- and high-growing broadleaf and coniferous trees and shrubs provide the most protection. All windbreaks in the survey area require irrigation.

Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The interval depends on the erodibility of the soil. Field windbreaks protect cropland and crops from wind, help to keep snow on the fields, and provide food and cover for wildlife.

Environmental plantings help to beautify and screen houses and other buildings and to abate noise. The plants, mostly evergreen shrubs and trees, are closely spaced. To ensure plant survival, a healthy planting stock of suitable species should be planted properly on a well prepared site and maintained in good condition.

Information on planning windbreaks and screens and planting and caring for trees and shrubs can be obtained from local offices of the Soil Conservation Service or the Cooperative Extension Service or from a commercial nursery.

### Wildlife Habitat

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

Wildlife is a valuable resource in the survey area. It provides opportunities for outdoor activities, such as hunting and fishing.

Wildlife is a product of the soil. Like crops, wildlife responds to good management. Most managed wildlife habitat is created, improved, or maintained by planting suitable vegetation, by manipulating existing vegetation to bring about the natural establishment of desired plants, or by a combination of both. The habitat elements needed by specific species of wildlife generally require several kinds of soil and a combination of land uses. The habitat for various kinds of wildlife is described in the following paragraphs.

*Habitat for openland wildlife* consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include mule deer, valley quail, pheasant, meadowlark, field sparrow, and cottontail. Irrigated

areas of general soil map units 2, 3, and 4 are used extensively by openland wildlife.

*Habitat for woodland wildlife* consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include sage grouse, woodcock, woodpeckers, cottontail, jackrabbit, coyote, and mule deer. General soil map unit 18 and scattered areas of unit 19 are used extensively by woodland wildlife.

*Habitat for wetland wildlife* consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, muskrat, mink, mule deer, and beaver. General soil map unit 3 and other small riparian areas are used by wetland wildlife.

*Habitat for rangeland wildlife* consists of areas of shrubs and wild herbaceous plants. Wildlife attracted to rangeland include antelope, mule deer, sage grouse, meadowlark, lark bunting, chukar, badger, and jackrabbit. General soil map unit 2, units 5 through 10, and units 12, 13, 15, 16, 19, and 20 are used extensively by rangeland wildlife.

In the detailed soil map unit descriptions, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat. The elements of wildlife habitat are described in the following paragraphs.

*Grain and seed crops* are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

*Grasses and legumes* are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, orchardgrass, brome grass, clover, and alfalfa.

*Wild herbaceous plants* are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these

plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are needlegrass, balsamroot, globemallow, wheatgrass, and bluegrass.

*Coniferous plants* furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are singleleaf pinyon and juniper.

*Shrubs* are bushy woody plants that produce fruit, buds, twigs, bark, and foliage. Soil properties and features that affect the growth of shrubs are depth of the root zone, available water capacity, salinity, and soil moisture. Examples of shrubs are mountainmahogany, bitterbrush, snowberry, and big sagebrush.

*Wetland plants* are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, reed canarygrass, saltgrass, cordgrass, rushes, sedges, and cattail.

*Shallow water areas* have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

## Engineering

In the section "Detailed Soil Map Units," information for planning land uses related to urban development and to water management is provided. Soils are rated for various uses, and the most limiting features are identified. The ratings are given for the following selected uses: roadfill; topsoil; daily cover for landfill; shallow excavations; local roads and streets; pond reservoir areas; embankments, dikes, and levees; sand; and gravel. For some soils the restrictive features that affect drainage, irrigation, and terraces and diversions also are given. More information can be obtained from local offices of the Soil Conservation Service.

*The information is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part*

*of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.*

*The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.*

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information. Local ordinances and regulations need to be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings. The criteria used to determine the ratings are provided in the Appendix. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to (1) evaluate the potential of areas for residential, commercial, industrial, and recreation uses; (2) make preliminary estimates of construction conditions; (3) evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; (4) evaluate alternative sites for sanitary landfills; (5) plan detailed onsite investigations of soils and geology; (6) locate potential sources of gravel, sand, earthfill, and topsoil; (7) plan ponds, terraces, and other structures for soil and water conservation; and (8) predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the map unit descriptions, along with the soil maps, the taxonomic unit descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

In the detailed map unit descriptions, the soils are rated for various uses and the most limiting features are identified. The ratings are based on observed performance of the soils and on the estimated data given in the map units and lab test data. The limiting features are defined in the Glossary.

Soil interpretations are periodically updated as more is learned about a soil and its behavior under specific uses. New technology can change the relative suitability of a soil for various uses; however, the soil maps remain useful after the soil interpretations originally published with them have become outdated. For this reason, the criteria and guides that were used to make the interpretations presented in the detailed map units are provided in the Appendix. These criteria have been taken directly from the National Soils Handbook (28).

The limitations for shallow excavations, local roads and streets, pond reservoir areas, and embankments, dikes, and levees are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

*Shallow excavations* are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and the depth to the water table.

*Local roads and streets* have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material, a base of gravel, crushed rock, or stabilized soil material, and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock or to a cemented pan, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost action potential, and depth to a high water table affect the traffic-supporting capacity.

*Pond reservoir areas* hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage



potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

*Embankments, dikes, and levees* are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In the detailed map unit descriptions, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the upper layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

In the detailed map unit descriptions, the soils are rated for use as roadfill, topsoil, and daily cover for landfill.

*Roadfill* is soil material that is excavated in one place and used in road embankments in another place. The soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the upper layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, a low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more

than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet, and the depth to the water table is less than 1 foot. These soils may have layers of suitable material, but the material is less than 3 feet thick.

*Topsoil* is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal water table at or near the surface.

The upper layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

*Daily cover for landfill* is the soil material that is used to cover compacted solid waste in an area type sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to wind erosion.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as final cover for a landfill should be suitable for plants. The upper layer generally has the best workability, more organic matter, and the best potential for plants. Material from the upper layer should be stockpiled for use as the final cover.

The soils are rated as a probable or improbable source of *sand* and *gravel*. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Sand and gravel are natural aggregates suitable for commercial use with a minimum of processing. Sand and gravel are used in many kinds of construction. Specifications for each use vary widely. Only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the taxonomic unit descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a *probable* source has a layer of clean sand or gravel or a layer of sand or gravel that is as much as 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an *improbable* source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

In some of the detailed map unit descriptions, the restrictive features that affect drainage, irrigation, and terraces and diversions are listed.

*Drainage* is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and potential frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, or sulfur. Availability of drainage outlets is not considered in the ratings.

*Irrigation* is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

*Terraces and diversions* are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.



# Soil Properties

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Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, given in the section "Detailed Soil Map Units," are explained in the following paragraphs.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help characterize key soils.

The estimates of soil properties given in the tables and map unit descriptions include the range of grain-size distribution, the engineering classifications, and some physical and chemical properties of the major layers of each soil. Pertinent soil and water features are given in the map unit descriptions.

## Engineering Index Properties

Estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area are given in the detailed map unit descriptions and in table 5. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

*Depth* to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each taxonomic unit under "Taxonomic Units and Their Morphology."

*Texture* is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters

in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as about 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

*Classification* of the soils is determined according to the Unified soil classification system (2) and the system adopted by the American Association of State Highway and Transportation Officials (1).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SP-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

*Rock fragments* ranging from 2 millimeters in diameter to larger than 3 inches are indicated as a percentage of the total soil on a dry-weight basis. Cobbles and stones are larger than 3 inches in diameter, and pebbles are 2 millimeters to 3 inches in diameter. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage. The estimates are rounded to the nearest 5 percent.

*Percentage (of soil particles) passing designated sieves* is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The

sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

*Liquid limit and plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

## Physical and Chemical Properties

Estimates of some characteristics and features that affect soil behavior are given in the detailed map unit descriptions. The estimates are based on field observations and on test data for these and similar soils. Many of the specific terms used to express these properties are defined in the Glossary.

*Permeability* refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems, septic tank absorption fields, and construction where the rate of water movement under saturated conditions affects behavior.

*Available water capacity* refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in total inches of water for the soil profile. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

*Soil reaction* is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

*Salinity* is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the map unit descriptions. Salinity affects the suitability of a soil for range seeding and crop production, the stability of the soil if used as construction material, and the potential of the soil to corrode metal and concrete.

*Sodicity* is a measure of exchangeable sodium in the soil at saturation. It is expressed as a sodium adsorption ratio (SAR), or the ratio of sodium to calcium plus magnesium. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The sodicity of irrigated soils is affected by the quality of irrigation water and management of the soil. Hence, the sodicity of soils in individual fields can differ greatly from the value given in the map unit descriptions. Sodicity affects the suitability of a soil for range seeding and crop production and the stability of the soil if used as construction material.

*Shrink-swell potential* is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The change is based on the soil fraction less than 2 millimeters in diameter. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, greater than 9 percent, is sometimes used.

*Erosion factor K* indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE)

to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, very fine sand, sand, and organic matter (up to 4 percent) and on soil structure and permeability. The estimates are modified by the presence of rock fragments. Values of K range from 0.02 to 0.69. The higher the value the more susceptible the soil is to sheet and rill erosion by water. The estimate for erosion factor K applies only to the surface layer.

*Erosion factor T* is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

*Wind erodibility groups* are made up of soils that have similar properties affecting their resistance to wind erosion in cultivated areas. The groups indicate the susceptibility of soil to wind erosion. Soils are grouped according to the following distinctions:

1. Coarse sands, sands, fine sands, and very fine sands. These soils are generally not suitable for crops. They are extremely erodible, and vegetation is difficult to establish.

2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, and sapric soil material. These soils are very highly erodible. Crops can be grown if intensive measures to control wind erosion are used.

3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams. These soils are highly erodible. Crops can be grown if intensive measures to control wind erosion are used.

4L. Calcareous loams, silt loams, clay loams, and silty clay loams. These soils are erodible. Crops can be grown if intensive measures to control wind erosion are used.

4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay. These soils are moderately erodible. Crops can be grown if measures to control wind erosion are used.

5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material. These soils are slightly erodible. Crops can be grown if measures to control wind erosion are used.

6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay. These soils are very slightly erodible. Crops can be grown if ordinary measures to control wind erosion are used.

7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material. These soils are very slightly erodible. Crops can be grown if ordinary measures to control wind erosion are used.

8. Soils that are not subject to wind erosion because of coarse fragments on the surface or because of surface wetness.

The *hazard of erosion* is an estimate of the likelihood of erosion by water and wind when the soil is bare. The hazard of erosion by water is determined on the basis of erosion factor K and the percent of slope. The hazard of erosion by wind is determined on the basis of the stability of the soil surface and the climate. The guidelines used in estimating the hazard of erosion are given in the Appendix.

## Soil and Water Features

Estimates of various soil and water features are given in the detailed map unit descriptions. The estimates are used in land use planning that involves engineering considerations.

*Hydrologic soil groups* are used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the infiltration of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

*Flooding*, the temporary inundation of an area, is caused by overflowing streams or by runoff from adjacent slopes. Water standing for short periods after rainfall or snowmelt is not considered flooding, nor is water in swamps and marshes.

The frequency and duration of flooding and the time of year when flooding is most likely are given in the map unit descriptions.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *occasional* that it occurs, on the average, no more than once in 2 years; and *frequent* that it occurs, on the average, more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and absence of distinctive horizons that form in soils that are not subject to flooding.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

*High water table* (seasonal) is the highest level of a saturated zone in the soil in most years. The depth to a seasonal high water table applies to undrained soils. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. The depth to the seasonal high water table is given in the map unit descriptions. A water table that is seasonally high for less than 1 month is not indicated. Only saturated zones within a depth of about 6 feet are indicated.

*Depth to bedrock* is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping.

*Hardpans* are cemented or indurated subsurface layers within a depth of 5 feet. Such pans cause difficulty in excavation. Pans are classified as thin or thick. A thin pan is less than 3 inches thick if continuously indurated or less than 18 inches thick if

discontinuous or fractured. Excavations can be made by trenching machines, backhoes, or small rippers. A thick pan is more than 3 inches thick if continuously indurated or more than 18 inches thick if discontinuous or fractured. Such a pan is so thick or massive that blasting or special equipment is needed in excavation.

*Potential for frost action* is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage mainly to pavements and other rigid structures.

*Corrosivity* pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors creates a severe corrosion environment. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

# Classification of the Soils

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The system of soil classification used by the National Cooperative Soil Survey has six categories (27). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 6 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

**ORDER.** Eleven soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Aridisol.

**SUBORDER.** Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Orthid (*Orth*, meaning true, plus *id*, from Aridisol).

**GREAT GROUP.** Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Camborthids. (*Camb*, meaning change, plus *orthid*, the suborder of the Aridisols that does not have an argillic or a natric horizon).

**SUBGROUP.** Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Camborthids.

**FAMILY.** Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Mostly the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is coarse-loamy, mixed, mesic Typic Camborthids.

**SERIES.** The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series.

## Taxonomic Units and Their Morphology

In this section, each taxonomic unit recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each unit. A pedon, a small three-dimensional area of soil, that is typical of the unit in the survey area is described. The detailed description of each soil horizon follows standards in the *Soil Survey Manual* (26). Many of the technical terms used in the descriptions are defined in *Soil Taxonomy* (27). Unless otherwise stated, matrix colors in the descriptions are for dry soil. Following the pedon description is the range of important characteristics of the soils in the unit.

Because a large part of Lander County was mapped under several private contracts, some of the typical pedons described in this survey are located in the soil survey areas of Lander County, Nevada, North Part, and Eureka County Area, Nevada. As the survey progressed, it was determined that some of the soils in the area had already been mapped under contract. The



typical pedon descriptions already completed for these soils were used, regardless of the survey area in which they occurred. The survey area in which the typical pedon for each taxonomic unit is located is given in the section "Taxonomic Units and Their Morphology." Characteristics of the soils in a map unit in this survey area are similar but not identical to those of the soils outside the survey area.

The map units of each taxonomic unit are described in the section "Detailed Soil Map Units."

## Akerue Series

*Depth class:* Shallow to duripan

*Drainage class:* Well drained

*Parent material:* Residuum derived from andesite, rhyolite, and quartzite

*Positions on landscape:* Low hills, side slopes of mountains

*Slope:* 15 to 30 percent

*Mean annual precipitation:* 10 inches

*Mean annual temperature:* About 44 degrees F

*Taxonomic class:* Clayey-skeletal, montmorillonitic, frigid, shallow Xerollic Durargids

### Typical Pedon

About 35 percent of the surface is covered with pebbles, 35 percent with cobbles, and 2 percent with stones.

A—0 to 3 inches; brown (10YR 5/3) very cobbly loam, dark brown (10YR 3/3) moist; weak medium and thick platy structure; slightly hard, very friable, sticky and plastic; few very fine and fine roots; many very fine and fine vesicular pores; 10 percent pebbles, 25 percent cobbles, and 2 percent stones; mildly alkaline (pH 7.4); clear wavy boundary.

Bt1—3 to 6 inches; pale brown (10YR 6/3) very cobbly clay loam, dark brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores; few thin clay films on faces of peds; 10 percent pebbles and 25 percent cobbles; mildly alkaline (pH 7.4); clear wavy boundary.

Bt2—6 to 15 inches; light yellowish brown (10YR 6/4) very cobbly clay, dark yellowish brown (10YR 4/4) moist; moderate fine and medium angular blocky structure; hard, firm, very sticky and very plastic; common very fine and fine roots; few very fine and fine tubular pores; many thick pressure faces on peds; 10 percent pebbles and 35 percent cobbles;

mildly alkaline (pH 7.6); abrupt wavy boundary. Bqkm—15 to 21 inches; very pale brown (10YR 8/4), indurated duripan that has many rock fragments cemented with several continuous laminar layers; light yellowish brown (10YR 6/4) moist; massive; extremely hard; few fine roots in some fractures; violently effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary.

R—21 inches; andesite.

### Typical Pedon Location

*Soil name and map unit in which located:* Akerue very cobbly loam, 15 to 30 percent slopes, in Akerue-Simpark-Punchbowl association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 18 miles east of Austin; about 500 feet north and 1,500 feet west of the southeast corner of sec. 31, T. 18 N., R. 47 E.

### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry early in June through October

*Average annual soil temperature:* 44 to 47 degrees F

*Depth to the duripan:* 14 to 20 inches

*Depth to bedrock:* 15 to 26 inches

*Reaction in the A and Bt horizons:* Neutral or mildly alkaline, increasing in alkalinity with increasing depth

*Other characteristics:* Silica and lime pendants on rock fragments in the lower part of the Bt horizon in some pedons

*Control section:*

Content of clay—35 to 45 percent

Content of rock fragments—35 to 60 percent, mostly cobbles

*A horizon:*

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3

*Bt horizon:*

Hue—7.5YR or 10YR

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4

Texture—very cobbly clay loam or very cobbly clay

## Allor Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Alluvium derived from various kinds of rock

*Positions on landscape:* Fan piedmont remnants

*Slope:* 0 to 30 percent

*Mean annual precipitation:* About 9 inches

*Mean annual temperature:* About 48 degrees F

**Taxonomic class:** Fine-loamy, mixed, mesic  
Durixerollic Haplargids

### Typical Pedon

About 30 percent of the surface is covered with pebbles.

- A1—0 to 6 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine vesicular pores; 15 percent pebbles; mildly alkaline (pH 7.8); abrupt smooth boundary.
- A2—6 to 12 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine tubular pores; 5 percent pebbles; mildly alkaline (pH 7.8); abrupt smooth boundary.
- Bt—12 to 19 inches; pale brown (10YR 6/3) gravelly clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; many very fine and fine roots; common very fine and fine tubular pores; few thin clay films coating peds; 15 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary.
- Btq—19 to 34 inches; pale brown (10YR 6/3) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; slightly hard, friable, sticky and plastic; many very fine and fine roots; common very fine and fine tubular pores; few moderately thick and common thin clay films coating peds; 25 percent pebbles and 15 percent weakly cemented durinodes; mildly alkaline (pH 7.8); clear smooth boundary.
- Bq—34 to 42 inches; pale brown (10YR 6/3), weakly silica-cemented gravelly loamy sand, brown (10YR 4/3) moist; massive; very hard, firm, nonsticky and nonplastic; few fine roots; few fine tubular pores; 25 percent pebbles and 5 percent cobbles; mildly alkaline (pH 7.8); clear smooth boundary.
- Bqk—42 to 60 inches; pale brown (10YR 6/3), weakly silica-cemented gravelly loamy sand, brown (10YR 4/3) moist; massive; very hard, firm, nonsticky and nonplastic; 55 percent pebbles and 5 percent cobbles; slightly effervescent; moderately alkaline (pH 8.3).

### Typical Pedon Location

*Soil name and map unit in which located:* Allor gravelly loam, 4 to 15 percent slopes, in Zaidy-Allor association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 10 miles northeast of Austin; about 650 feet south and 2,400 feet west of the northeast corner of sec. 21, T. 20 N., R. 45 E.

### Range in Characteristics

*Soil moisture content:* Usually dry, but moist in winter and spring

*Average annual soil temperature:* 47 to 50 degrees F

*Combined thickness of the A and Bt horizons:* 20 to 34 inches

*Depth to the Bq horizon:* 20 to 34 inches

*Depth to carbonates (when present):* More than 40 inches

*Reaction:* Mildly alkaline or moderately alkaline, commonly increasing in alkalinity with increasing depth

*Other characteristics:* BA or Bt2 horizon present in some pedons

#### Control section:

Texture—clay loam or sandy clay loam

Content of clay—27 to 35 percent

Content of rock fragments—15 to 35 percent, mainly pebbles

#### A horizon:

Value—3 or 4 moist

Chroma—2 or 3

#### Bt horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4

Other characteristics—as much as 15 percent durinodes in the lower part in most pedons

#### Bq and Bqk horizons:

Value—5 to 7 dry, 4 or 5 moist

Chroma—3 or 4

Texture—loamy sand or sandy loam

Content of rock fragments—20 to 60 percent, mainly pebbles

Other characteristics—continuous, weak cementation; strata of noncemented material in some pedons

### Atlow Series

*Depth class:* Shallow

*Drainage class:* Well drained

*Parent material:* Residuum derived from chert, argillite, shale, greenstone, and altered rhyolitic tuff

*Positions on landscape:* Summits and side slopes of mountains and hills

*Slope:* 8 to 50 percent

*Mean annual precipitation:* About 10 inches

*Mean annual temperature:* About 46 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, mesic Lithic Xerollic Haplargids

#### Typical Pedon

About 40 percent of the surface is covered with pebbles and 10 percent with cobbles.

A—0 to 3 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine vesicular pores; 25 percent pebbles and 10 percent cobbles; moderately alkaline (pH 8.0); clear smooth boundary.

Bt1—3 to 7 inches; brown (10YR 5/3) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, very friable, sticky and plastic; common very fine and fine roots; common very fine interstitial pores; 25 percent pebbles and 10 percent cobbles; moderately alkaline (pH 8.0); clear smooth boundary.

Bt2—7 to 14 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine angular blocky structure; hard, friable, very sticky and very plastic; common very fine and fine roots; common very fine interstitial pores and few very fine tubular pores; 30 percent pebbles and 15 percent cobbles; few thin lime coatings on the underside of coarse fragments; moderately alkaline (pH 8.0); abrupt irregular boundary.

R—14 inches; chert; thin lime coatings in rock fractures.

#### Typical Pedon Location

*Soil name and map unit in which located:* Atlow very gravelly loam, 15 to 50 percent slopes, in Atlow-Stingdorn association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 30 miles southwest of Battle Mountain; about 1,200 feet east and 1,050 feet north of the southwest corner of sec. 31, T. 29 N., R. 43 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in June through October

*Average annual soil temperature:* 48 to 52 degrees F

*Depth to bedrock:* 14 to 20 inches

#### A horizon:

Value—6 or 7 dry, 3 to 5 moist

Chroma—2 or 3

Reaction—mildly alkaline or moderately alkaline

#### Bt horizon:

Value—5 to 7 dry, 4 or 5 moist

Chroma—2 to 4

Texture—very gravelly clay loam or very cobbly clay loam

Content of clay—27 to 35 percent

Content of rock fragments—35 to 50 percent, dominantly pebbles and cobbles

Structure—angular blocky or subangular blocky

Reaction—moderately alkaline or strongly alkaline

Other characteristics—noncalcareous matrix, thin lime coatings on the underside of rock fragments

### Attella Series

*Depth class:* Very shallow

*Drainage class:* Well drained

*Parent material:* Residuum and colluvium that are derived from dolostone, dolomite, and calcareous shale and include some loess

*Positions on landscape:* Side slopes of mountains

*Slope:* 30 to 50 percent

*Mean annual precipitation:* About 11 inches

*Mean annual temperature:* About 42 degrees F

**Taxonomic class:** Loamy-skeletal, mixed (calcareous), frigid Lithic Xeric Torriorthents

#### Typical Pedon

About 80 percent of the surface is covered with pebbles and 5 percent with flagstones.

A—0 to 3 inches; light brownish gray (10YR 6/2) very gravelly loam, dark brown (10YR 3/3) moist; moderate thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine vesicular and interstitial pores; 45 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

C—3 to 7 inches; light brownish gray (10YR 6/2) very gravelly loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and many medium roots; common very fine and fine tubular pores; 45 percent pebbles; common thin lime coatings on the underside of pebbles and few lime pendants;

strongly effervescent; moderately alkaline (pH 8.3); abrupt wavy boundary.

2R—7 inches; hard, fractured dolostone.

#### **Typical Pedon Location**

*Soil name and map unit in which located:* Attella very gravelly loam, 30 to 50 percent slopes, in Hymas-Xine-Attella association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 12 miles north of Austin; about 2,100 feet north and 2,000 feet east of the southwest corner of sec. 26, T. 21 N., R. 44 E.

#### **Range in Characteristics**

*Soil moisture content:* Usually moist from mid-October to mid-June, dry from mid-June to mid-October

*Average annual soil temperature:* 41 to 47 degrees F

*Depth to bedrock:* 6 to 10 inches

*Calcium carbonate equivalent:* 5 to 20 percent

*Reaction:* Mildly alkaline or moderately alkaline

*Content of organic carbon:* 1.0 to 2.5 percent when mixed

#### *Control section:*

Content of clay—15 to 25 percent when mixed

Texture—very gravelly loam or very gravelly silt loam

Content of rock fragments—35 to 60 percent when mixed, mainly pebbles and some channers

#### *A horizon:*

Value—6 or 7 dry, 3 or 4 moist

Chroma—2 or 3

Structure—weak or moderate, thin or medium, and platy; or weak or moderate, fine or medium, and granular

Consistence—friable or very friable (moist)

#### *C horizon:*

Value—6 or 7 dry, 3 to 5 moist

Chroma—2 to 4

Structure—fine or medium subangular blocky, or massive

Consistence—soft or slightly hard (dry), friable or very friable (moist)

Effervescence—strongly effervescent or violently effervescent

Other characteristics—coatings of lime on the underside of rock fragments, soft masses of lime in some pedons

### **Barrier Series**

*Depth class:* Shallow to duripan

*Drainage class:* Well drained

*Parent material:* Mixed alluvium derived from volcanic and sedimentary rock

*Positions on landscape:* Fan piedmont remnants

*Slope:* 4 to 15 percent

*Mean annual precipitation:* About 10 inches

*Mean annual temperature:* About 45 degrees F

**Taxonomic class:** Loamy, mixed, frigid, shallow Haploxerollic Durorthids

#### **Typical Pedon**

About 15 percent of the surface is covered with pebbles and 10 percent with cobbles and stones.

A1—0 to 2 inches; pale brown (10YR 6/3) cobbly loam, dark brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; many medium and fine vesicular pores; 10 percent pebbles and 15 percent cobbles; strongly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.

A2—2 to 4 inches; pale brown (10YR 6/3) loam, dark brown (10YR 4/3) moist; moderate thick platy structure; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; many fine vesicular pores; 5 percent pebbles; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary.

A3—4 to 7 inches; pale brown (10YR 6/3) loam, dark brown (10YR 4/3) moist; moderate fine and very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; common fine interstitial pores; 5 percent pebbles; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Bqk—7 to 12 inches; very pale brown (10YR 7/3) gravelly loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common medium, fine, and very fine roots; common fine and very fine interstitial pores; 15 percent durinodes; 30 percent pebbles and pebble-sized pan fragments; violently effervescent; moderately alkaline (pH 8.2); abrupt wavy boundary.

Bqkm—12 to 27 inches; light gray (10YR 7/2), cobbly, strongly cemented duripan, pale brown (10YR 6/3) moist; massive; very hard, very firm; common medium and fine roots matted on top; very few very fine interstitial pores; few thin discontinuous indurated lamellae; violently effervescent; clear smooth boundary.

Cqkm—27 to 60 inches; very pale brown (10YR 7/3), stratified, strongly and weakly silica-cemented very cobbly loamy sand, brown (10YR 5/3) moist; massive; hard, firm, nonsticky and nonplastic; common fine and very fine interstitial pores; 20

percent pebbles and 30 percent cobbles; strongly effervescent; moderately alkaline (pH 8.2).

### Typical Pedon Location

*Soil name and map unit in which located:* Barrier cobbly loam, 4 to 15 percent slopes, in Barrier-Kobeh association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 32 miles southeast of Austin, in the Monitor Valley; about 1,300 feet north and 1,000 feet west of the southeast corner of sec. 18, T. 16 N., R. 48 E.

### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in June through October

*Average annual soil temperature:* 45 to 47 degrees F

*Depth to the duripan:* 10 to 20 inches

*Content of clay in the control section:* 8 to 18 percent

*Texture of the fine-earth fraction:* Sandy loam, fine sandy loam, or loam

*Content of rock fragments:* 10 to 35 percent when mixed, mainly pebbles

*Reaction:* Moderately alkaline or strongly alkaline

*Effervescence:* Strongly effervescent or violently effervescent

*Other characteristics:* Continuous, weakly cemented or noncemented strata below the duripan in some pedons

#### A horizon:

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3

#### Bqk horizon:

Value—7 or 8 dry, 5 to 7 moist

Chroma—2 or 3

## Batan Series

*Depth class:* Very deep

*Drainage class:* Moderately well drained

*Parent material:* Silty alluvium derived from various kinds of rock, mostly volcanic rock, that is high in content of loess and pyroclastic material

*Positions on landscape:* Alluvial flat remnants

*Slope:* 0 to 2 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 49 degrees F

**Taxonomic class:** Fine-silty, mixed (calcareous), mesic Durorthidic Torriorthents

### Typical Pedon

A—0 to 5 inches; light gray (10YR 7/2) silt loam, brown (10YR 5/3) moist; strong very thin platy structure;

hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; many fine vesicular pores and few very fine interstitial and tubular pores; violently effervescent; strongly alkaline (pH 8.8); abrupt smooth boundary.

C—5 to 9 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate very thin and thin and strong very thick platy structure; hard, very friable, slightly sticky and plastic; common very fine roots; many very fine interstitial and tubular pores; violently effervescent; very strongly alkaline (pH 9.2); clear wavy boundary.

Cq—9 to 19 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots and few fine and medium roots; many very fine tubular pores; 30 percent hard, firm, brittle durinodes 5 to 15 millimeters in diameter; violently effervescent; strongly alkaline (pH 9.0); clear wavy boundary.

Cqk1—19 to 30 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; few fine faint iron mottles that are brown (7.5YR 5/4) and dark brown (7.5YR 4/4) moist; weak very thin platy structure; slightly hard, very friable, sticky and plastic; few very fine and fine roots; many very fine interstitial and tubular pores; 20 percent hard, firm, brittle durinodes 5 to 15 millimeters in diameter; fine white (10YR 8/2) filaments or threads of lime; violently effervescent; strongly alkaline (pH 8.8); gradual smooth boundary.

Cqk2—30 to 44 inches; light gray (2.5Y 7/2) silt loam, grayish brown (2.5Y 5/2) moist; common fine distinct iron mottles that are light brown (7.5YR 6/4) and dark yellowish brown (10YR 4/4) moist; strong medium platy structure parting to moderate very fine angular blocky; hard, friable, slightly sticky and plastic; few very fine, fine, and medium roots; common very fine tubular pores; 20 percent hard, firm, brittle durinodes 5 to 15 millimeters in diameter; fine white (10YR 8/2) filaments or threads of lime; violently effervescent; strongly alkaline (pH 8.6); gradual smooth boundary.

Cqk3—44 to 63 inches; light gray (2.5Y 7/2) silty clay loam, grayish brown (2.5Y 5/2) moist; many fine distinct iron mottles that are brown (7.5YR 4/4) and dark reddish brown (5YR 3/2), dark reddish gray (5YR 4/2) and dark reddish brown (2.5YR 2/4) moist; moderate very thin and thin platy structure parting to moderate very fine angular blocky; hard, friable, sticky and plastic; few very fine and fine roots; many very fine interstitial pores and few fine tubular pores; 20 percent hard, firm, brittle durinodes 5 to 15 millimeters in diameter; fine white

(10YR 8/1) filaments or threads of lime; violently effervescent; strongly alkaline (pH 8.8); clear smooth boundary.

C—63 to 68 inches; very pale brown (10YR 7/3) silt loam, dark grayish brown (2.5Y 4/2) moist; common fine faint iron mottles that are pinkish gray (7.5YR 6/2) moist and common fine distinct iron mottles that are brown (7.5YR 4/2) moist; massive; hard, friable, slightly sticky and plastic; few fine roots; many very fine interstitial and tubular pores; violently effervescent; strongly alkaline (pH 8.6).

#### Typical Pedon Location

*Map unit in which located:* Batan silt loam

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 6.2 miles southeast of Battle Mountain; about 1,585 feet west and 1,585 feet north of the southeast corner of sec. 31, T. 32 N., R. 46 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry late in May to early in November

*Depth to the water table:* 60 inches or more

*Average annual soil temperature:* 47 to 53 degrees F

*Depth to the Cq horizon:* 9 to 24 inches

*Content of salt and sodium:* Affected by salt and sodium in most pedons; the upper part not affected in some pedons near drainageways and stream channels

*Content of mottles:* Common faint or distinct iron mottles below a depth of 10 inches

*Depth to gypsum crystals (when present):* More than 20 inches in some pedons

*Other characteristics:* Nonconformable, stratified, very gravelly sand and fine sand 2C horizon at a depth of more than 50 inches in some pedons

#### Control section:

Content of clay—20 to 30 percent

Texture—dominantly silt loam or silty clay loam, but strata of fine sandy loam to silty clay in some pedons

#### A horizon:

Hue—2.5Y or 10YR

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 to 4

Structure—platy or massive

Consistence—slightly hard or hard, slightly sticky or sticky, and slightly plastic or plastic

Reaction—moderately alkaline to very strongly alkaline

Effervescence—slightly effervescent to violently effervescent

#### C horizon:

Hue—2.5Y or 10YR

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 to 4

Structure—platy, angular blocky, prismatic, or massive

Reaction—strongly alkaline or very strongly alkaline

Effervescence—strongly effervescent or violently effervescent

#### Cq and Cqk horizons:

Hue—2.5Y or 10YR

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 to 4

Other characteristics—dominantly 20 to 40 percent durinodes, but strata that are as much as 70 percent discontinuous, weakly silica-cemented durinodes present in some pedons

### Belate Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Colluvium and residuum derived from rhyolitic tuff and andesite

*Positions on landscape:* Convex side slopes of mountains

*Slope:* 15 to 50 percent

*Mean annual precipitation:* About 13 inches

*Mean annual temperature:* About 43 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, frigid Aridic Argixerolls

#### Typical Pedon

About 65 percent of the surface is covered with pebbles and 15 percent with cobbles and stones.

A1—0 to 4 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine roots; common very fine vesicular pores; 40 percent pebbles and 5 percent cobbles; neutral (pH 7.2); clear smooth boundary.

A2—4 to 14 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate medium angular blocky structure; hard, friable, sticky and plastic; common very fine, fine, and medium roots; many very fine and few medium tubular pores; 30 percent pebbles; mildly alkaline (pH 7.4); clear wavy boundary.

Bt1—14 to 19 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate

medium angular blocky structure; hard, friable, sticky and plastic; few very fine and fine roots; common very fine tubular pores; few thin clay films on peds; 35 percent pebbles and 5 percent cobbles; mildly alkaline (pH 7.4); gradual wavy boundary.

**Bt2**—19 to 47 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, dark yellowish brown (10YR 3/4) moist; strong medium angular blocky structure; hard, friable, very sticky and very plastic; few very fine roots; few very fine tubular pores; common moderately thick and many thin clay films on peds; 35 percent pebbles and 15 percent cobbles; mildly alkaline (pH 7.6); gradual smooth boundary.

**Bt3**—47 to 60 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; strong fine angular blocky structure; hard, friable, very sticky and very plastic; few very fine roots; few very fine tubular pores; few moderately thick and common thin clay films on faces of peds; 40 percent pebbles and 15 percent cobbles; matrix is noneffervescent; few thin lime coatings on the underside of rock fragments; mildly alkaline (pH 7.8).

#### Typical Pedon Location

*Soil name and map unit in which located:* Belate very gravelly loam, 15 to 30 percent slopes, in Belate-Softscrabble-Torro association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 32 miles west of Austin; in an unsectionalized area about 1,000 feet west and 700 feet north of the southeast corner of the assumed sec. 15, T. 17 N., R. 38 E.

#### Range in Characteristics

*Soil moisture content:* Moist to a depth of about 15 to 20 inches in winter and spring in most years, dry in mid-July through October

*Average annual soil temperature:* 43 to 47 degrees F

*Thickness of the mollic epipedon:* 10 to 20 inches (includes the upper part of the argillic horizon)

*Thickness of the solum and depth to bedrock:* 60 to 80 inches

*Reaction:* Neutral or mildly alkaline

*Control section:*

Content of clay—18 to 30 percent

Content of rock fragments—35 to 50 percent, mainly pebbles

*A horizon:*

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Structure—weak or moderate, fine or medium, and subangular blocky; or weak or moderate, thin or medium, and platy

*Bt horizon:*

Value—5 or 6 dry, 2 to 4 moist

Chroma—3 or 4

Texture—very gravelly loam or very gravelly clay loam

Content of clay—18 to 30 percent

Content of rock fragments—35 to 60 percent, mainly pebbles

Structure—dominantly fine and medium subangular blocky or angular blocky, but Bt3 horizon massive in some pedons

#### Belted Series

*Depth class:* Very shallow or shallow to duripan

*Drainage class:* Well drained

*Parent material:* Mixed alluvium

*Positions on landscape:* Fan piedmont remnants

*Slope:* 2 to 8 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* 53 degrees F

*Taxonomic class:* Loamy, mixed, mesic, shallow Haplic Durargids

#### Typical Pedon

About 30 percent of the surface is covered with pebbles.

**A**—0 to 4 inches; light gray (10YR 7/2) gravelly fine sandy loam, grayish brown (10YR 5/2) moist; moderate medium platy structure; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; many very fine and fine and common medium vesicular pores; 25 percent pebbles; slightly effervescent; strongly alkaline (pH 8.6); clear smooth boundary.

**Bt**—4 to 11 inches; very pale brown (10YR 7/3) gravelly clay loam, yellowish brown (10YR 5/4) moist; moderate fine and medium granular structure; hard, friable, sticky and plastic; common very fine and fine roots; many very fine tubular pores; common thin clay films on faces of peds; 25 percent pebbles; strongly effervescent; strongly alkaline (pH 8.6); gradual wavy boundary.

**Btk**—11 to 14 inches; very pale brown (10YR 7/3) gravelly loam, yellowish brown (10YR 5/4) moist; moderate fine and medium granular structure; hard, friable, sticky and plastic; few very fine roots; many very fine tubular and interstitial pores; common medium soft lime masses; 25 percent pebbles; violently effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

**Bqkm**—14 to 25 inches; white (10YR 8/2), strongly silica-cemented duripan with discontinuous laminar

cap about 0.5 to 1.0 millimeter thick; light yellowish brown (10YR 6/4) moist; massive; very hard, very firm; few very fine roots; few very fine tubular pores; common medium soft lime masses; violently effervescent; 0.5- to 2.0-inch-thick, discontinuous layer of pale brown (10YR 6/3) very gravelly loamy fine sand, dark brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; violently effervescent; strongly alkaline (pH 8.8); abrupt smooth boundary.

2Cqk—25 to 60 inches; alternating layers of very pale brown (10YR 7/3) very gravelly sand and discontinuous, strongly cemented duripan; pale brown (10YR 6/3) moist; layers of very gravelly sand are single grain and loose, nonsticky and nonplastic; duripan layers are massive and very hard, very firm, nonsticky and nonplastic; few very fine roots; many fine interstitial pores; 60 percent pebbles; violently effervescent; strongly alkaline (pH 9.0).

#### Typical Pedon Location

*Soil name and map unit in which located:* Belted gravelly fine sandy loam, 2 to 8 percent slopes, in Unsel-Wardenot-Belted association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 25 miles south of Austin; about 1,900 feet south and 400 feet east of the northwest corner of sec. 26, T. 16 N., R. 45 E.

#### Range in Characteristics

*Soil moisture content:* Usually dry, but moist in some part for short periods in winter and early in spring and for 10 to 20 days cumulatively in July through October as a result of convection storms

*Average annual soil temperature:* 53 to 59 degrees F

*Depth to the duripan:* 6 to 14 inches

*Depth to the 2C horizon:* 24 to 61 inches

*Reaction:* Moderately alkaline to very strongly alkaline

*Control section:*

Content of clay—averages 15 to 28 percent

Content of rock fragments—averages 0 to 25 percent

*A horizon:*

Value—5 to 7 dry, 4 or 5 moist

Chroma—2 or 3

Structure—platy, subangular blocky, or granular

Effervescence—slightly effervescent or strongly effervescent

*Bt horizon:*

Hue—7.5YR or 10YR

Value—5 to 7 dry, 4 or 5 moist

Chroma—2 to 4

Structure—subangular blocky, platy, or granular  
Texture—sandy clay loam, sandy loam, loam, or clay loam

Content of clay—18 to 30 percent

Content of rock fragments—0 to 30 percent

Effervescence—slightly effervescent or strongly effervescent

*Bqkm horizon:*

Structure—platy or massive

Other characteristics—strongly cemented, continuous laminae that generally are more than 0.5 inch thick

*2C horizon:*

Hue—10YR or 7.5YR

Value—6 or 7 dry, 4 to 6 moist

Chroma—2 to 4 dry or moist

Texture—variable (lake sediment)

Effervescence—noneffervescent to violently effervescent

### Beoska Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Loess over loamy and gravelly alluvium derived from various kinds of rock

*Positions on landscape:* Fan piedmonts, fan piedmont remnants

*Slope:* 0 to 8 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 49 degrees F

**Taxonomic class:** Fine-loamy, mixed, mesic Duric Natrargids

#### Typical Pedon

A1—0 to 5 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate very thin and thin platy structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine and few fine roots; many fine vesicular and very fine tubular pores; 20 percent pebbles on the surface; moderately alkaline (pH 8.0); clear wavy boundary.

A2—5 to 9 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate medium and coarse prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots and few fine and medium roots; common very fine tubular pores; less than 2 percent pebbles; moderately alkaline (pH 8.2); clear wavy boundary.

AB—9 to 13 inches; mottled, very pale brown (10YR 7/2 and 7/3) silt loam, brown (10YR 4/3) moist; weak



coarse prismatic structure; hard, friable, slightly sticky and plastic; few very fine roots and very few fine roots; many very fine tubular pores; less than 2 percent pebbles; strongly alkaline (pH 8.6); abrupt wavy boundary.

**Btn**—13 to 18 inches; pale brown (10YR 6/3) silty clay loam, dark brown (10YR 3/3) moist; weak medium and coarse prismatic structure parting to moderate very fine and fine angular blocky; hard, very friable, sticky and very plastic; many very fine and fine roots; common very fine tubular pores; many thin clay films on peds and lining pores; 5 percent rounded pebbles 2 to 15 millimeters in diameter; slightly effervescent; strongly alkaline (pH 8.6); clear irregular boundary.

**Btkn**—18 to 24 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; weak medium and coarse prismatic structure parting to moderate very fine and fine angular blocky; hard, friable, slightly sticky and plastic; many very fine and fine roots; common very fine tubular pores; many thin clay films on peds and in pores; common fine filaments and threads of lime and coatings of lime on pebbles; 5 percent rounded pebbles 2 to 15 millimeters in diameter; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary.

**2Bqk1**—24 to 55 inches; light gray (10YR 7/2) very gravelly very fine sandy loam, brown (10YR 5/3) moist; massive; soft, very friable, nonsticky and slightly plastic; few very fine roots; common very fine tubular pores; common fine filaments of lime; 25 percent weak and moderate durinodes 5 to 15 millimeters in diameter; 40 percent rounded pebbles 2 to 15 millimeters in diameter; violently effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

**2Bqk2**—55 to 62 inches; very pale brown (10YR 7/3) very gravelly fine sandy loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky and slightly plastic; few very fine roots; common very fine tubular pores; common fine filaments of lime; 25 percent weak and moderate durinodes 5 to 15 millimeters in diameter; 40 percent rounded pebbles 2 to 15 millimeters in diameter; violently effervescent; moderately alkaline.

#### Typical Pedon Location

*Map unit in which located:* Beoska silt loam, 0 to 2 percent slopes

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 50 miles southwest of Battle Mountain; about 2,200 feet east and 1,200 feet north of the southeast corner of sec. 26, T. 25 N., R. 42 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry from late in May through November

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to the 2Bqk horizon:* 16 to 26 inches

#### A horizon:

Hue—10YR or 2.5Y

Value—6 or 7 dry

Chroma—2 or 3

Structure—platy, prismatic, or massive

#### Btkn horizon:

Value—3 or 4 moist, 6 or 7 dry

Chroma—3 or 4

Texture—silty clay loam, silt loam, or clay loam

Content of clay—25 to 35 percent

Content of rock fragments—as much as 15 percent, mainly pebbles

Reaction—moderately alkaline or strongly alkaline

Other characteristics—lime in some pedons

#### Bqk horizon:

Value—7 or 8 dry, 4 to 6 moist

Texture—stratified very fine sandy loam, fine sandy loam, and sandy loam

Content of clay—5 to 15 percent

Content of rock fragments—15 to 35 percent to a depth of 40 inches and 15 to 65 percent below this depth, mainly pebbles

Consistence—soft to hard (dry), very friable to firm (moist)

Reaction—moderately alkaline or strongly alkaline

Other characteristics—20 to 40 percent durinodes in a friable matrix, or weak or strong, discontinuous, silica cementation

#### Blackhawk Series

*Depth class:* Shallow to duripan

*Drainage class:* Well drained

*Parent material:* Loess, mixed alluvium

*Positions on landscape:* Fan piedmont remnants

*Slope:* 2 to 15 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 47 degrees F

**Taxonomic class:** Loamy, mixed, mesic, shallow Entic Durorthids

#### Typical Pedon

**A**—0 to 8 inches; pale brown (10YR 6/3) very fine sandy loam, dark brown (10YR 3/3) moist; moderate very thin platy structure; soft, very friable, nonsticky and nonplastic; many fine and very fine roots and few medium roots; many fine tubular

pores; 3 percent pebbles; moderately alkaline (pH 8.4); clear smooth boundary.

Bw—8 to 14 inches; very pale brown (10YR 7/3) loam, brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many fine and very fine roots; many fine tubular pores; 3 percent pebbles; slightly effervescent; strongly alkaline (pH 9.0); abrupt smooth boundary.

Bqkm—14 to 17 inches; brown (10YR 5/3), strongly silica-cemented duripan, dark brown (10YR 4/3) moist; massive; extremely hard, extremely firm; few fine roots matted on top; common fine soft lime filaments; violently effervescent; strongly alkaline (pH 9.0); abrupt smooth boundary.

Bk1—17 to 38 inches; very pale brown (10YR 7/3) loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; few fine tubular pores; 5 percent pebbles; few fine soft lime filaments; violently effervescent; strongly alkaline (pH 8.6); clear smooth boundary.

2Bk2—38 to 47 inches; very pale brown (10YR 7/3) very gravelly sandy loam, light yellowish brown (10YR 6/4) moist; massive; hard, friable, nonsticky and nonplastic; few fine roots; few fine tubular pores; 40 percent pebbles; common medium soft lime masses; violently effervescent; moderately alkaline (pH 8.4); clear smooth boundary.

3Bk3—47 to 60 inches; light yellowish brown (10YR 6/4) extremely gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable; few fine roots; few fine tubular pores; 70 percent pebbles; common fine soft lime masses; slightly effervescent; moderately alkaline (pH 8.0).

#### Typical Pedon Location

*Soil name and map unit in which located:* Blackhawk very fine sandy loam, 0 to 4 percent slopes, in Golconda-Blackhawk association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 8 miles north of Battle Mountain; about 1,500 feet north and 500 feet east of the southwest corner of sec. 26, T. 33 N., R. 45 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and early in spring, dry late in May through November

*Average annual soil temperature:* 47 to 54 degrees F

*Depth to the duripan:* 14 to 20 inches

*Control section:*

Content of clay—averages 5 to 10 percent

Content of rock fragments—as much as 30 percent, mainly pebbles

Content of silt and very fine sand—65 to 80 percent

*A horizon:*

Hue—10YR or 2.5Y

Value—6 or 7 dry, 3 to 5 moist

Chroma—2 or 3

Structure—weak or moderate, very thin to thick, and platy, or massive

Reaction—mildly alkaline to strongly alkaline

*Bw horizon:*

Hue—10YR or 2.5Y

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3

Texture—silt loam, loam, or very fine sandy loam

Content of clay—averages 5 to 10 percent

Content of rock fragments—0 to 30 percent, mainly pebbles

Structure—weak or moderate, thin to thick, and platy; weak or moderate, fine to coarse, and subangular blocky; or massive

Reaction—mildly alkaline to strongly alkaline

*Bq, Bk, and C horizons (when present):*

Hue—10YR or 2.5Y

Value—5 to 7 dry, 4 to 6 moist

Chroma—2 or 3

Structure—weak to strong, thin or thick, and platy, or massive

*Bqkm horizon:*

Consistence—very hard or extremely hard

Reaction—moderately alkaline to very strongly alkaline

Other characteristics—two or more strongly cemented layers interbedded with weakly silica-cemented material or strata that have a friable matrix and durinodes

*Bk and Bqk horizons (when present):*

Texture—stratified loam, gravelly coarse sandy loam, or gravelly coarse sand

*2Bqk, 2Bk, and 2C horizons (when present):*

Texture—dominantly unconformable strata of very gravelly or extremely gravelly sand, coarse sand, loamy coarse sand, and sandy loam below a depth of 30 inches, but strata of clay in some pedons

#### Broyles Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Thin mantle of loess over mixed loamy alluvium

*Positions on landscape:* Fan skirts, inset fan remnants, fan aprons

*Slope:* 0 to 8 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 48 degrees F

**Taxonomic class:** Coarse-loamy, mixed, mesic Duric Camborthids

### Typical Pedon

**A**—0 to 5 inches; light brownish gray (2.5YR 6/2) very fine sandy loam, dark grayish brown (10YR 4/2) moist; weak very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and common medium oblique roots; many very fine vesicular and interstitial pores and few fine tubular pores; moderately alkaline (pH 8.4); abrupt wavy boundary.

**Bw**—5 to 11 inches; light gray (10YR 7/2) very fine sandy loam, brown (10YR 4/3) moist; yellowish brown (10YR 5/4) stains on faces of peds; weak and moderate medium and thick platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine vesicular, interstitial, and tubular pores; strongly alkaline (pH 8.6); abrupt wavy boundary.

**Bk**—11 to 15 inches; light gray (10YR 7/2) sandy loam, brown (10YR 4/3) moist; massive; hard, friable, slightly sticky and slightly plastic; few very fine random roots and very few medium oblique roots; many very fine vesicular, interstitial, and tubular pores; about 1 percent hard, firm, brittle durinodes 15 to 30 millimeters in diameter; very slightly effervescent in matrix and strongly effervescent in spots; very strongly alkaline (pH 9.2); abrupt wavy boundary.

**Bqk**—15 to 19 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; massive; hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine vesicular, interstitial, and tubular pores; about 25 percent hard, firm, brittle durinodes 10 to 25 millimeters in diameter; common fine lime filaments and threads; strongly effervescent; very strongly alkaline (pH 9.2); clear wavy boundary.

**Bqk1**—19 to 28 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; very few very fine roots; common very fine vesicular, interstitial, and tubular pores; about 30 percent hard, firm, brittle durinodes 15 to 30 millimeters in diameter; few fine gypsum filaments, threads, and seams as much as 3 inches wide; slightly effervescent; strongly alkaline (pH 9.0); abrupt wavy boundary.

**Bqk2**—28 to 44 inches; pale brown (10YR 6/3) loamy sand, brown (10YR 4/3) moist; massive; slightly

hard, very friable, nonsticky and nonplastic; very few very fine roots; common very fine vesicular, interstitial, and tubular pores; about 20 percent hard, firm, brittle durinodes 20 to 35 millimeters in diameter; common fine gypsum filaments, threads, and seams as much as 3 inches wide; strongly effervescent; strongly alkaline (pH 9.0); abrupt wavy boundary.

**Cq**—44 to 60 inches; very pale brown (10YR 7/3) loamy fine sand, brown (10YR 4/3) moist; massive; hard, firm, nonsticky and nonplastic; nonbrittle when wet; common very fine tubular pores; silica cementation bridging sand grains; strongly alkaline (pH 8.8).

### Typical Pedon Location

*Map unit in which located:* Broyles very fine sandy loam, 0 to 2 percent slopes

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 21 miles south of Battle Mountain; about 3,420 feet east and 700 feet north of the southwest corner of sec. 30, T. 32 N., R. 45 E.

### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry late in May through November

*Average annual soil temperature:* 47 to 55 degrees F

*Depth to the Bk or Bqk horizon:* 10 to 24 inches

*Other characteristics:* Strongly cemented duripan below a depth of 40 inches in some pedons

#### Control section:

Content of clay—5 to 15 percent

Texture—stratified fine sandy loam, very fine sandy loam, or silt loam in the upper part; loam, fine sandy loam, sandy loam, or loamy sand in the lower part

Content of rock fragments—0 to 35 percent pebbles, increasing with increasing depth

#### A horizon:

Hue—10YR or 2.5Y

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3

Structure—weak or moderate, thin to thick, and platy, or massive

Reaction—moderately alkaline or strongly alkaline

Other characteristics—commonly noneffervescent, but effervescent in some pedons because of recharge from dust

#### Bw horizon:

Hue—10YR or 2.5Y

Value—6 or 7 dry, 4 or 5 moist

Chroma—mainly 2 or 3, but 4 on faces of some peds

Structure—thin or medium and platy, fine to coarse and subangular blocky or prismatic, or massive

Reaction—moderately alkaline or strongly alkaline

*Bqk or 2Bqk horizon (when present):*

Reaction—strongly alkaline or very strongly alkaline

Other characteristics—20 to 75 percent durinodes; very weak silica cementation surrounding durinodes in matrix in some pedons; few or common fine gypsum filaments or seams in the lower part of some pedons

*C horizon:*

Hue—10YR or 2.5Y

Value—6 to 8 dry, 4 to 6 moist

Chroma—1 to 4

Reaction—strongly alkaline or very strongly alkaline

## **Bubus Series**

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Alluvium derived from various kinds of rock, mostly volcanic rock that is high in pyroclastic material

*Positions on landscape:* Alluvial flat remnants, lake-plain terraces

*Slope:* 0 to 4 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 49 degrees F

**Taxonomic class:** Coarse-loamy, mixed (calcareous), mesic Durorthidic Torriorthents

### **Typical Pedon**

A—0 to 6 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 4/3) moist; weak thin platy structure; slightly hard, very friable, nonsticky and nonplastic; many fine vesicular and very fine interstitial pores; 10 percent fine pebbles; slightly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

C1—6 to 10 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; weak very thin and thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots and common fine and medium roots; few very fine interstitial pores and common very fine tubular pores; 5 percent fine pebbles; violently effervescent; strongly alkaline (pH 8.6); clear smooth boundary.

C2—10 to 15 inches; very pale brown (10YR 7/3) very fine sandy loam, yellowish brown (10YR 5/4) moist; moderate very thin and thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots and few fine and medium

roots; common very fine interstitial and tubular pores; 5 percent fine pebbles; violently effervescent; strongly alkaline (pH 8.8); clear wavy boundary.

Cqk1—15 to 29 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; few fine faint iron mottles that are brown (7.5YR 5/4 and 4/4) moist; massive; slightly hard and hard, very friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; common very fine tubular pores; 3 percent fine pebbles; 35 percent hard, firm and very firm, brittle durinodes 2 to 35 millimeters in diameter; fine filaments or threads of gypsum; violently effervescent; strongly alkaline (pH 8.6); gradual wavy boundary.

Cqk2—29 to 60 inches; very pale brown (10YR 7/4) very fine sandy loam, yellowish brown (10YR 5/4) moist; few fine distinct iron mottles that are yellowish brown (10YR 5/6) moist and few fine faint mottles that are dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine tubular pores; 3 percent fine pebbles; 35 percent hard, firm, brittle durinodes 2 to 30 millimeters in diameter; fine filaments or threads of gypsum; violently effervescent; moderately alkaline (pH 8.4).

### **Typical Pedon Location**

*Map unit in which located:* Bubus very fine sandy loam  
*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 1.6 miles southeast of Battle Mountain; about 2,100 feet south and 1,750 feet east of the northwest corner of sec. 28, T. 32 N., R. 45 E.

### **Range in Characteristics**

*Soil moisture content:* Moist in winter and spring, dry late in May through November

*Average annual soil temperature:* 47 to 53 degrees F

*Content of clay in the control section:* 10 to 15 percent

*Content of rock fragments:* 0 to 5 percent pebbles

*Content of salt and sodium:* Commonly strongly affected by salt and sodium throughout, but moderately or slightly affected in the upper part in some pedons

*Other characteristics:* Faint or distinct iron mottles and segregated gypsum common below a depth of 10 inches; stratified sand and gravel at a depth of more than 40 inches in some pedons

*A horizon:*

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 to 4

Structure—platy or massive

Consistence—nonsticky or slightly sticky, nonplastic or slightly plastic

Reaction—moderately alkaline to very strongly alkaline

Effervescence—slightly effervescent to violently effervescent

*C horizon:*

Value—6 or 7 dry, 4 to 6 moist

Chroma—2 to 4

Texture—dominantly very fine sandy loam, but stratified loam, silt loam, very fine sandy loam, fine sandy loam, or sandy loam in some pedons

Structure—platy or massive

Reaction—moderately alkaline to very strongly alkaline, commonly decreasing in alkalinity with increasing depth

Effervescence—strongly effervescent or violently effervescent

*Cqk horizon (when present):*

Reaction—moderately alkaline to very strongly alkaline

Content of durinodes—20 to 70 percent

## **Bucan Series**

*Depth class:* Deep

*Drainage class:* Well drained

*Parent material:* Loess that is high in content of volcanic ash over residuum and colluvium derived from extrusive volcanic rock

*Positions on landscape:* Side slopes of mountains

*Slope:* 30 to 50 percent

*Mean annual precipitation:* About 9 inches

*Mean annual temperature:* About 44 degrees F

**Taxonomic class:** Fine, montmorillonitic, frigid Xerollic Haplargids

### **Typical Pedon**

About 20 percent of the surface is covered with pebbles and 35 percent with cobbles and stones.

A—0 to 4 inches; pale brown (10YR 6/3) very cobbly loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, very friable, sticky and slightly plastic; few very fine and fine roots; few fine vesicular pores; 30 percent pebbles, 15 percent cobbles, and 10 percent stones; neutral (pH 7.3); clear smooth boundary.

Bt1—4 to 10 inches; pale brown (10YR 6/3) clay, brown (10YR 4/3) moist; moderate medium subangular blocky structure; very hard, firm, very sticky and very plastic; common very fine and fine roots; few very fine tubular pores; 10 percent pebbles; common moderately thick clay films on faces of peds and lining pores and few thick clay films on

faces of peds; mildly alkaline (pH 7.8); abrupt wavy boundary.

Bt2—10 to 18 inches; light yellowish brown (10YR 6/4) clay, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure; very hard, firm, very sticky and very plastic; common fine roots; common fine tubular pores; 10 percent pebbles; common moderately thick clay films on faces of peds and lining pores and few thick clay films on faces of peds; mildly alkaline (pH 7.8); abrupt wavy boundary.

2Btk1—18 to 36 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; hard, firm, very sticky and very plastic; few fine roots; few fine tubular pores; 20 percent pebbles and 5 percent cobbles; common moderately thick clay films on faces of peds and lining pores; thin lime coatings on the underside of rock fragments; mildly alkaline (pH 7.8); gradual wavy boundary.

2Btk2—36 to 52 inches; light reddish brown (10YR 6/4) gravelly clay loam, reddish brown (10YR 4/4) moist; massive; hard, firm, sticky and plastic; few fine and medium roots; few fine tubular pores; 20 percent pebbles and 10 percent cobbles; few moderately thick clay films on faces of peds; thin lime coatings on the underside of rock fragments; strongly effervescent; moderately alkaline (pH 8.2); gradual irregular boundary.

R—52 inches; basalt.

### **Typical Pedon Location**

*Soil name and map unit in which located:* Bucan very cobbly loam, 30 to 50 percent slopes, in Walti-Softscrabble-Bucan association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 26 miles east of Austin; about 600 feet north of the southwest corner of sec. 12, T. 20 N., R. 47 E.

### **Range in Characteristics**

*Soil moisture content:* Usually dry, but moist in some part late in October to early in June

*Average annual soil temperature:* 45 to 47 degrees F

*Thickness of the solum and depth to bedrock:* 40 to 60 inches

*Other characteristics:* The epipedon is less than one-third as thick as the solum

### *Control section:*

Content of clay—45 to 60 percent

Content of rock fragments—as much as 15 percent when mixed

Depth to segregated lime—15 to 30 inches

*A horizon:*

Value—5 or 6 dry (value of 6 occurs when the upper 7 inches are mixed), 3 or 4 moist  
 Chroma—2 or 3  
 Structure—weak or moderate, very thin to medium, and platy; weak or moderate, fine or medium, and granular or subangular blocky; or massive  
 Consistence—soft or slightly hard (dry)

*Bt horizon:*

Value—4 to 6 dry, 3 to 5 moist  
 Chroma—2 to 4  
 Content of clay—45 to 60 percent  
 Content of rock fragments—as much as 15 percent  
 Structure—weak to strong, fine or medium, and subangular or angular blocky in the upper part; moderate or strong, fine or medium, and prismatic in the lower part  
 Reaction—neutral or mildly alkaline

*2Btk horizon:*

Value—4 to 6 dry, 4 or 5 moist  
 Chroma—3 to 6  
 Texture—gravelly clay loam, gravelly clay, or cobbly clay  
 Content of clay—35 to 45 percent  
 Content of rock fragments—15 to 35 percent, mainly pebbles (cobbles common in the lower part in some pedons)  
 Structure—medium and fine angular blocky or prismatic, or massive  
 Reaction—mildly alkaline to strongly alkaline

**Buffaran Series**

*Depth class:* Shallow to duripan

*Drainage class:* Well drained

*Parent material:* Alluvium derived from various kinds of rock

*Positions on landscape:* Fan piedmonts, mountain valley fans, ballenas

*Slope:* 2 to 30 percent

*Mean annual precipitation:* About 10 inches

*Mean annual temperature:* About 46 degrees F

**Taxonomic class:** Clayey, montmorillonitic, mesic, shallow Xerollic Durargids

**Typical Pedon**

About 15 percent of the surface is covered with pebbles.

A—0 to 5 inches; light brownish gray (10YR 6/2) gravelly loam, brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, very friable, nonsticky and nonplastic; many very fine roots and

common fine and medium roots; common fine and very fine and few medium vesicular and tubular pores; 15 percent pebbles; mildly alkaline (pH 7.4); abrupt smooth boundary.

Bt1—5 to 13 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 3/4) moist; strong medium prismatic structure; hard, firm, very sticky and very plastic; common fine expd roots and few medium roots; few very fine and fine tubular pores; 10 percent pebbles; continuous moderately thick clay films on faces of peds and plugging pores; mildly alkaline (pH 7.8); clear smooth boundary.

Bt2—13 to 16 inches; yellowish brown (10YR 5/4) gravelly clay loam, dark yellowish brown (10YR 3/6) moist; strong medium angular blocky structure; hard, firm, very sticky and very plastic; common fine expd roots and few very fine, fine, and medium roots; few very fine, fine, and medium tubular pores; 20 percent pebbles; many thick clay films on faces of peds and lining pores; mildly alkaline (pH 7.8); clear wavy boundary.

Bqkm1—16 to 20 inches; strongly cemented duripan that has a 0.5-inch-thick, indurated, laminar cap; massive; extremely hard, extremely firm; 30 percent pebbles; slightly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary.

Bqkm2—20 inches; indurated duripan; massive; extremely hard, extremely firm; strongly effervescent.

**Typical Pedon Location**

*Soil name and map unit in which located:* Buffaran gravelly loam, 2 to 8 percent slopes, in Buffaran-Spaspsey-Allor association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 21 miles west of Austin; about 500 feet north and 2,150 feet east of the southwest corner of sec. 8, T. 19 N., R. 40 E.

**Range in Characteristics**

*Soil moisture content:* Moist in winter and spring, dry early in June through October

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to the duripan:* 14 to 20 inches

*A horizon:*

Hue—10YR or 7.5YR

Value—5 or 6 dry (value of more than 5.5 occurs when the upper 7 inches is mixed), 3 or 4 moist

Chroma—2 or 3

Structure—subangular blocky or platy

*Bt horizon:*

Hue—10YR or 7.5YR

Value—5 or 6 dry, 3 or 4 moist

Chroma—2, 3, 4, or 6

Texture—clay or clay loam  
 Content of clay—35 to 50 percent  
 Content of rock fragments—10 to 30 percent,  
 mostly gravel  
 Reaction—neutral or mildly alkaline

*Bq horizon (when present):*

Texture—loam or clay loam  
 Reaction—neutral to moderately alkaline  
 Effervescence—noneffervescent to strongly  
 effervescent  
 Other characteristics—20 to 40 percent strongly  
 cemented duripan fragments

### **Burrita Series**

*Depth class:* Shallow

*Drainage class:* Well drained

*Parent material:* Residuum derived from interbedded  
 chert, quartzite, sandstone, shale, and greenstone

*Positions on landscape:* Crests of hills, side slopes of  
 mountains

*Slope:* 4 to 50 percent

*Mean annual precipitation:* About 9 inches

*Mean annual temperature:* About 48 degrees F

**Taxonomic class:** Clayey-skeletal, montmorillonitic,  
 mesic Lithic Xerollic Haplargids

#### **Typical Pedon**

A—0 to 3 inches; pale brown (10YR 6/3) very cobbly  
 loam, brown (10YR 4/3) moist; moderate medium  
 platy structure; slightly hard, very friable, slightly  
 sticky and slightly plastic; common very fine and  
 fine roots and few medium roots; many fine and  
 common medium vesicular pores; 20 percent  
 pebbles and 25 percent cobbles; moderately  
 alkaline (pH 8.0); abrupt smooth boundary.

Bt1—3 to 6 inches; light yellowish brown (10YR 6/4)  
 gravelly clay loam, dark yellowish brown (10YR 4/4)  
 moist; moderate medium subangular blocky  
 structure; slightly hard, friable, slightly sticky and  
 slightly plastic; common very fine, fine, and medium  
 roots; common fine and few medium tubular pores;  
 20 percent pebbles; common thin and few  
 moderately thick clay films on faces of peds and  
 lining pores; moderately alkaline (pH 8.0); clear  
 smooth boundary.

Bt2—6 to 13 inches; yellowish brown (10YR 5/4) very  
 gravelly clay loam, dark yellowish brown (10YR 3/4)  
 moist; strong medium angular blocky structure;  
 hard, firm, sticky and plastic; common fine roots and  
 few fine and medium roots; common fine and few  
 medium tubular pores; 30 percent pebbles and 5

percent cobbles; common moderately thick clay  
 films on faces of peds and lining pores; moderately  
 alkaline (pH 8.2); clear wavy boundary.

Bt3—13 to 18 inches; yellowish brown (10YR 5/4) very  
 cobbly clay loam, dark yellowish brown (10YR 3/4)  
 moist; strong medium angular blocky structure;  
 hard, friable, very sticky and very plastic; few fine  
 and medium roots; few fine and medium tubular  
 pores; 30 percent pebbles and 20 percent cobbles;  
 common moderately thick clay films on faces of  
 peds and lining pores; moderately alkaline (pH 8.2);  
 abrupt smooth boundary.

R—18 inches; quartzite.

#### **Typical Pedon Location**

*Soil name and map unit in which located:* Burrita very  
 cobbly loam, 4 to 15 percent slopes, in Trunk-  
 Burrita-Rock outcrop association

*Location in Nevada:* Lander County, Nevada, North Part,  
 survey area; about 22 miles south of Battle  
 Mountain; in an unsectionalized area about 2,400  
 feet south and 2,600 feet west of the northeast  
 corner of the assumed sec. 28, T. 28 N., R. 44 E.

#### **Range in Characteristics**

*Soil moisture content:* Moist in winter and spring, dry in  
 July through October

*Average annual soil temperature:* 47 to 50 degrees F

*Combined thickness of the A and Bt horizons and depth  
 to bedrock:* 14 to 20 inches

#### *Control section:*

Content of clay—35 to 50 percent

Content of rock fragments—35 to 60 percent when  
 mixed, mainly pebbles, cobbles, and stones

Reaction—moderately alkaline or strongly alkaline

#### *A horizon:*

Value—5 to 7 dry, 3 to 5 moist

Chroma—2 to 4

Consistence—soft or slightly hard

#### *Bt horizon:*

Hue—10YR or 7.5YR

Value—4 to 6 dry, 3 or 4 moist

Chroma—3 to 6

Texture—very gravelly clay, very cobbly clay, very  
 stony clay, very gravelly clay loam, very cobbly  
 clay loam, or very stony clay loam

Structure—subangular blocky, angular blocky, or  
 massive

### **Caniwe Series**

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Loess and alluvium derived from various kinds of rock

*Positions on landscape:* Inset fans within mountain valley fans

*Slope:* 2 to 4 percent

*Mean annual precipitation:* About 11 inches

*Mean annual temperature:* About 48 degrees F

**Taxonomic class:** Fine-silty, mixed, mesic Aridic Duric Haploxerolls

### Typical Pedon

- A1—0 to 4 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate thin platy structure; soft, very friable, slightly sticky and nonplastic; common very fine, fine, and medium roots; common very fine tubular pores; neutral (pH 7.0); abrupt smooth boundary.
- A2—4 to 9 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium prismatic structure parting to moderate thin platy; slightly hard, very friable, sticky and plastic; common very fine, fine, and medium roots; common very fine tubular pores; neutral (pH 7.3); clear smooth boundary.
- A3—9 to 17 inches; grayish brown (10YR 5/2) silt loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine, fine, and medium roots; common very fine tubular pores; neutral (pH 7.2); gradual wavy boundary.
- 2Cq1—17 to 29 inches; pale brown (10YR 6/3) silty clay loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; hard, very friable, very sticky and very plastic; few very fine roots; common very fine tubular pores; 40 percent weakly cemented durinodes 5 to 15 millimeters in diameter; mildly alkaline (pH 7.4); gradual wavy boundary.
- 2Cq2—29 to 40 inches; pale brown (10YR 6/3) silty clay loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, very friable, sticky and plastic; few very fine roots; common very fine tubular pores; 55 percent weakly cemented durinodes 5 to 15 millimeters in diameter; mildly alkaline (pH 7.6); clear wavy boundary.
- 3Ck—40 to 60 inches; very pale brown (10YR 7/3) silt loam, dark brown (10YR 4/3) moist; massive; slightly hard, friable, sticky and plastic; very few very fine roots; few very fine tubular pores; common strongly effervescent fine lime seams and filaments; noneffervescent in matrix; moderately alkaline (pH 8.0).

### Typical Pedon Location

*Soil name and map unit in which located:* Caniwe silt loam, 2 to 8 percent slopes, in Handy-Caniwe-Zoesta association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 35 miles south of Battle Mountain; about 600 feet north and 1,200 feet east of the southwest corner of sec. 8, T. 25 N., R. 46 E.

### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry late in June to early in October

*Average annual soil temperature:* 47 to 52 degrees F

*Thickness of the mollic epipedon:* 10 to 19 inches

*Depth to the Cq horizon:* 14 to 26 inches

*Depth to carbonates:* 30 to 46 inches

*Control section:*

Content of clay—20 to 35 percent

Content of rock fragments—less than 5 percent

Texture—dominantly stratified silt loam or silty clay loam, but thin strata of clay loam or loam common in some pedons

*A horizon:*

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3

*Cq horizon:*

Value—3 or 4 moist

Chroma—2 to 4

Reaction—mildly alkaline or moderately alkaline

Other characteristics—25 to 60 percent weakly silica-cemented durinodes in a very friable or friable matrix

### Caphor Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Mixed alluvium

*Positions on landscape:* Fan skirts

*Slope:* 0 to 4 percent

*Mean annual precipitation:* About 6 inches

*Mean annual temperature:* About 49 degrees F

**Taxonomic class:** Coarse-loamy, mixed (calcareous), mesic Durorthidic Torriorthents

### Typical Pedon

- A1—0 to 3 inches; light brownish gray (10YR 6/2) fine sandy loam, brown (10YR 5/3) moist; weak thin platy structure; soft, very friable, slightly sticky and slightly plastic; very few fine roots; common very fine and few fine and medium vesicular pores;



strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

A2—3 to 7 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; very few very fine, fine, and medium roots; common fine and few very fine and medium vesicular pores; 5 percent pebbles; common fine lime coatings on the underside of pebbles; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary.

Bk—7 to 17 inches; pale brown (10YR 6/3) sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; few fine and medium tubular pores; 5 percent pebbles; 10 percent weakly cemented durinodes; few fine lime filaments or threads and common medium lime and silica coatings on the underside of pebbles; violently effervescent; strongly alkaline (pH 8.6); clear smooth boundary.

Bqk—17 to 35 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; 55 percent light gray (10YR 7/2), discontinuous, thick lenses that are very hard, very firm, and strongly silica-cemented; massive; slightly hard, friable, slightly sticky and nonplastic; 5 percent pebbles; common medium lime and silica coatings on the underside of pebbles; violently effervescent; strongly alkaline (pH 8.6); clear wavy boundary.

2Ck—35 to 60 inches; pale brown (10YR 6/3) gravelly coarse sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; 30 percent pebbles; common thin lime and silica coatings on the underside of pebbles; violently effervescent; strongly alkaline (pH 8.6).

#### Typical Pedon Location

*Soil name and map unit in which located:* Caphor fine sandy loam, 0 to 2 percent slopes, in Caphor association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 15 miles southeast of Austin, in the northern part of the Big Smoky Valley; about 2,000 feet south and 1,300 feet west of the northeast corner of sec. 14, T. 17 N., R. 45 E.

#### Range in Characteristics

*Soil moisture content:* Usually dry, but moist for short periods in November through May

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to Bqk horizon:* 15 to 30 inches

*Depth to 2Ck horizon:* 24 to 39 inches

#### Control section:

Texture—fine sandy loam or sandy loam

Content of clay—8 to 18 percent

Content of rock fragments—less than 15 percent when mixed, mainly pebbles

Reaction—moderately alkaline or strongly alkaline, increasing in alkalinity with increasing depth

#### A horizon:

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3

#### Bk horizon:

Value—6 or 7 dry, 4 to 6 moist

Chroma—3 or 4

#### Bqk horizon:

Value—6 or 7 dry, 4 to 6 moist

Chroma—2 to 4

Other characteristics—20 to 60 percent discontinuous strong silica cementation in a friable matrix

#### 2C horizon:

Value—6 or 7 dry, 4 to 6 moist

Chroma—3 or 4

Texture—stratified loamy sand or coarse sand

Content of pebbles—25 to 50 percent

### Chad Series

*Depth class:* Deep

*Drainage class:* Well drained

*Parent material:* Residuum derived from chert and shale

*Positions on landscape:* Side slopes of mountains

*Slope:* 15 to 50 percent

*Mean annual precipitation:* About 14 inches

*Mean annual temperature:* About 44 degrees F

*Taxonomic class:* Fine, mixed, frigid Aridic Argixerolls

#### Typical Pedon

About 10 percent of the surface is covered with pebbles and 20 percent with cobbles.

A1—0 to 4 inches; grayish brown (10YR 5/2) cobbly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and plastic; common very fine and fine roots; many very fine interstitial pores and few fine tubular pores; 10 percent pebbles and 20 percent cobbles; neutral (pH 7.0); clear wavy boundary.

A2—4 to 11 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common very fine and fine roots and

few medium roots; common very fine tubular and interstitial pores; 5 percent pebbles; neutral (pH 7.2); clear smooth boundary.

BA—11 to 14 inches; brown (10YR 5/3) clay loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure parting to moderate fine angular blocky; hard, firm, sticky and plastic; few fine exped roots; common very fine and few fine tubular pores; 10 percent pebbles; few thin clay films on faces of peds; mildly alkaline (pH 7.4); abrupt smooth boundary.

Bt1—14 to 28 inches; dark yellowish brown (10YR 4/4) clay, dark yellowish brown (10YR 3/4) moist; strong medium prismatic structure parting to strong fine angular blocky; hard, firm, sticky and plastic; few fine exped roots; common very fine tubular pores; 10 percent pebbles; many moderately thick clay films on faces of peds and lining pores; strongly effervescent; mildly alkaline (pH 7.4); clear smooth boundary.

Bt2—28 to 43 inches; dark yellowish brown (10YR 4/6) gravelly clay, dark yellowish brown (10YR 3/6) moist; moderate medium prismatic structure parting to strong fine angular blocky; hard, firm, sticky and plastic; common very fine and few medium tubular pores; 15 percent pebbles; many moderately thick pressure faces; strongly effervescent; mildly alkaline (pH 7.6); abrupt wavy boundary.

Cr—43 inches; highly fractured shale.

#### Typical Pedon Location

*Soil name and map unit in which located:* Chad cobbly loam, 30 to 50 percent slopes, in Walti-Softscrabble-Chad association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 28 miles northeast of Austin; about 1,000 feet south and 1,600 feet west of the northeast corner of sec. 8, T. 21 N., R. 48 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry late in June through October

*Average annual soil temperature:* 43 to 45 degrees F

*Thickness of the mollic epipedon:* 10 to 15 inches (includes the upper part of the argillic horizon in some pedons)

*Combined thickness of the A and Bt horizons:* 40 to 52 inches

*Depth to bedrock:* 40 to 60 inches

*Content of clay in the upper part of the argillic horizon:* 35 to 45 percent when mixed

*Content of rock fragments in the control section:* 10 to 30 percent fine pebbles

*Other characteristics:* C horizon present in some pedons

#### A horizon:

Value—4 or 5 dry

Chroma—2 or 3

#### Bt horizon:

Value—4 or 5 dry, 3 or 4 moist

Chroma—3 or 4 in the upper part; as much as 6 in the lower part

Texture—clay loam or clay, commonly gravelly

Structure—prismatic or angular blocky

### Chedehap Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Alluvium

*Positions on landscape:* Inset fans, fan aprons

*Slope:* 2 to 8 percent

*Mean annual precipitation:* About 8 inches

*Mean annual temperature:* About 51 degrees F

**Taxonomic class:** Coarse-loamy, mixed, mesic Xerollic Camborthids

#### Typical Pedon

About 30 percent of the surface is covered with pebbles.

A—0 to 5 inches; light brownish gray (10YR 6/2) coarse sandy loam, brown (10YR 3/2) moist; moderate medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few fine and medium roots; many fine and common medium interstitial and vesicular pores; 10 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary.

Bw—5 to 12 inches; light brownish gray (10YR 6/2) sandy loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and medium roots and common fine roots; common fine and medium tubular pores; 10 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary.

Bk1—12 to 25 inches; light gray (10YR 7/2) sandy loam, grayish brown (10YR 5/2) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine and medium roots; few fine tubular pores; strongly effervescent; moderately alkaline (pH 8.2); gradual smooth boundary.

Bk2—25 to 37 inches; light gray (10YR 7/2) sandy loam, grayish brown (10YR 5/2) moist; massive; slightly hard, friable, nonsticky and nonplastic; very few fine roots; few fine tubular pores; 10 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); abrupt irregular boundary.

2Bk3—37 to 60 inches; light brownish gray (10YR 6/2) loamy coarse sand, dark grayish brown (10YR 4/2) moist; single grain; loose, nonsticky and nonplastic; 15 percent pebbles; strongly effervescent; strongly alkaline (pH 8.6).

#### Typical Pedon Location

*Soil name and map unit in which located:* Chedehap coarse sandy loam, 2 to 8 percent slopes, in Chedehap-Enko-Ricert association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 9 miles southeast of Austin; about 1,400 feet north and 2,300 feet east of the southwest corner of sec. 21, T. 18 N., R. 45 E.

#### Range in Characteristics

*Soil moisture content:* Moist in some part from mid-October through May, dry in summer and early in fall

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to 2C horizon:* 25 to 40 inches

#### Control section:

Texture—averages sandy loam or coarse sandy loam

Content of clay—9 to 14 percent

Content of rock fragments—0 to 15 percent pebbles when mixed

#### A horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3

Reaction—neutral to moderately alkaline

#### Bw horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3

Structure—weak and prismatic, or weak or moderate and subangular blocky

Reaction—neutral to moderately alkaline

### Chiara Series

*Depth class:* Shallow

*Drainage class:* Well drained

*Parent material:* Mantle of loess that is high in content of volcanic ash over alluvium derived from various kinds of rock

*Positions on landscape:* Fan piedmont remnants

*Slope:* 2 to 15 percent

*Mean annual precipitation:* About 9 inches

*Mean annual temperature:* About 48 degrees F

**Taxonomic class:** Loamy, mixed, mesic, shallow Xerollic Durorthids

#### Typical Pedon

A1—0 to 2 inches; pale brown (10YR 6/3) very fine sandy loam, dark brown (10YR 3/3) moist; moderate very thin and weak medium platy structure; soft, very friable, slightly sticky and slightly plastic; many fine and very fine roots; many very fine and fine tubular pores and common fine vesicular pores; 5 percent pebbles; moderately alkaline (pH 8.0); clear smooth boundary.

A2—2 to 5 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; strong thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; 10 percent pebbles; moderately alkaline (pH 8.0); clear smooth boundary.

Bw—5 to 11 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common fine roots and few medium and coarse roots; few fine tubular pores; 10 percent pebbles; slightly effervescent; moderately alkaline (pH 8.4); clear smooth boundary.

Bqk—11 to 16 inches; very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; few fine and very fine roots; few fine tubular pores; 20 percent weakly cemented durinodes; strongly effervescent; strongly alkaline (pH 8.6); abrupt wavy boundary.

2Bqkm—16 to 26 inches; white (10YR 8/2), indurated duripan with continuous, very thin, silica laminae; massive; extremely hard, very firm; violently effervescent; strongly alkaline (pH 8.8).

#### Typical Pedon Location

*Soil name and map unit in which located:* Chiara very fine sandy loam, 2 to 8 percent slopes, in Bioya-Chiara-Cortez association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 20 miles north of Battle Mountain; about 450 feet west and 600 feet north of the southeast corner of sec. 33, T. 36 N., R. 45 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in June through October

*Average annual soil temperature:* 47 to 53 degrees F

*Depth to the duripan:* 10 to 20 inches

*Depth to lime accumulation:* 7 to 15 inches

#### Control section:

Content of clay—5 to 18 percent

Content of sand—less than 15 percent fine or coarser

Texture—very fine sandy loam, loam, or silt loam  
 Content of rock fragments—dominantly as much as 5 percent when mixed, mainly pebbles; 4 to 25 percent, mainly duripan fragments, in thin layers in some pedons

*A horizon:*

Value—3 or 4 moist  
 Chroma—2 or 3  
 Structure—weak or moderate, thin to thick, and platy, or massive  
 Reaction—neutral to moderately alkaline

*Bw horizon:*

Value—6 or 7 dry, 3 to 5 moist  
 Chroma—3 or 4  
 Structure—weak to strong, fine to coarse, and subangular blocky, or weak and prismatic  
 Reaction—mildly alkaline to strongly alkaline

*Bqk horizon:*

Reaction—moderately alkaline or strongly alkaline  
 Other characteristics—20 to 60 percent weakly cemented, brittle durinodes 0.3 to 1.0 inch in diameter

*Bqkm horizon:*

Value—6 to 8 dry, 5 to 7 moist  
 Chroma—2 to 4  
 Structure—massive; or weak or moderate, thick, and platy  
 Other characteristics—gravelly and sandy strata below a depth of 40 inches in some pedons

## **Clan Alpine Series**

*Depth class:* Moderately deep

*Drainage class:* Well drained

*Parent material:* Residuum and colluvium derived from rhyolitic and andesitic tuff

*Positions on landscape:* Side slopes of mountains

*Slope:* 15 to 75 percent

*Mean annual precipitation:* About 15 inches

*Mean annual temperature:* About 41 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, frigid Typic Argixerolls

### **Typical Pedon**

About 20 percent of the surface is covered with pebbles, 40 percent with cobbles, and 5 percent with stones.

A1—0 to 4 inches; grayish brown (10YR 5/2) extremely cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, very friable, nonsticky and

nonplastic; common very fine and fine roots; many very fine vesicular pores; 25 percent pebbles and 35 percent cobbles; neutral (pH 7.2); abrupt smooth boundary.

A2—4 to 9 inches; grayish brown (10YR 5/2) cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine tubular pores; 10 percent pebbles and 10 percent cobbles; neutral (pH 7.2); clear wavy boundary.

Bt1—9 to 12 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium angular blocky structure; slightly hard, friable, sticky and plastic; common fine and medium roots; common fine tubular pores; common thin clay films on peds; 30 percent pebbles and 10 percent cobbles; mildly alkaline (pH 7.4); clear wavy boundary.

Bt2—12 to 22 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; strong medium angular blocky structure; hard, friable, very sticky and plastic; few medium roots; many very fine tubular pores; common moderately thick clay films on peds; 30 percent pebbles and 10 percent cobbles; mildly alkaline (pH 7.4); gradual wavy boundary.

Bt3—22 to 27 inches; light yellowish brown (10YR 6/4) very gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common fine and medium roots; common very fine tubular pores; common thin clay films on peds; 30 percent pebbles and 10 percent cobbles; mildly alkaline (pH 7.4); clear wavy boundary.

BC—27 to 38 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky and nonplastic; few fine roots; common very fine interstitial pores; 40 percent pebbles and 10 percent cobbles; mildly alkaline (pH 7.6); abrupt irregular boundary.

2Cr—38 to 49 inches; weathered, highly fractured rhyolitic tuff; some soil material and roots in some pockets.

### **Typical Pedon Location**

*Soil name and map unit in which located:* Clan Alpine extremely cobbly loam, 30 to 50 percent slopes, in Itca-Clan Alpine-Torro association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 33 miles southwest of

Austin: about 1,200 feet south and 800 feet west of the northeast corner of sec. 15, T. 17 N., R. 38 E.

### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in mid-July to mid-October

*Average annual soil temperature:* 43 to 45 degrees F

*Thickness of the mollic epipedon:* 8 to 14 inches

(includes the Bt1 horizon in some pedons)

*Thickness of the solum:* 20 to 40 inches

*Depth to paralithic contact:* 20 to 40 inches

*Depth to lithic contact:* 40 to 60 inches

*Other characteristics:* Some pedons do not have a BC horizon overlying the paralithic contact

### Control section:

Content of clay—25 to 35 percent

Content of rock fragments—35 to 60 percent, mainly pebbles and cobbles

### A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3

Structure—weak or moderate, fine or medium, and subangular blocky

### Bt horizon:

Value—dominantly 6 or 7 dry and 4 or 5 moist, but 5 dry and 3 moist in the upper part in some pedons

Chroma—3 or 4

Texture—very cobbly clay loam, very cobbly loam, or very gravelly clay loam

Structure—subangular blocky or angular blocky

Reaction—neutral or mildly alkaline

## Cleavage Series

*Depth class:* Shallow

*Drainage class:* Well drained

*Parent material:* Residuum and colluvium derived from rhyolite and other igneous rock

*Positions on landscape:* Crests and side slopes of mountains

*Slope:* 4 to 30 percent

*Mean annual precipitation:* About 14 inches

*Mean annual temperature:* About 44 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, frigid Lithic Argixerolls

### Typical Pedon

About 60 percent of the surface is covered with pebbles and 10 percent with cobbles.

A—0 to 4 inches; grayish brown (10YR 5/2) very

gravelly fine sandy loam, very dark grayish brown (10YR 3/2) moist; moderate thin platy structure parting to moderate fine granular; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine vesicular pores; 30 percent pebbles and 10 percent cobbles; neutral (pH 7.2); abrupt smooth boundary.

BA—4 to 7 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; 25 percent pebbles and 10 percent cobbles; neutral (pH 7.2); clear wavy boundary.

Bt—7 to 15 inches; brown (10YR 5/3) extremely gravelly clay loam, dark yellowish brown (10YR 3/4) moist; moderate fine and medium angular blocky structure; slightly hard, friable, sticky and plastic; few medium roots; common very fine tubular pores; common thin clay films on faces of peds; 50 percent pebbles and 20 percent cobbles; neutral (pH 7.2); abrupt irregular boundary.

2R—15 inches; rhyolitic tuff.

### Typical Pedon Location

*Soil name and map unit in which located:* Cleavage very gravelly fine sandy loam, 4 to 15 percent slopes, in Softscrabble-Walti-Cleavage association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 25 miles east of Austin; about 2,000 feet south and 2,800 feet east of the northwest corner of sec. 28, T. 17 N., R. 38 E.

### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in July through October for 70 to 120 consecutive days

*Average annual soil temperature:* 44 to 47 degrees F

*Thickness of the mollic epipedon:* 7 to 10 inches (excluding Bt horizon)

*Depth to bedrock:* 14 to 20 inches

*Reaction:* Neutral or mildly alkaline

### Control section:

Content of clay—20 to 35 percent

Content of rock fragments—50 to 80 percent, mostly pebbles and cobbles

### A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3

Structure—platy, granular, or subangular blocky

### BA horizon:

Chroma—2 to 4

Texture—very cobbly loam or very gravelly loam

*Bt horizon:*

Hue—7.5YR or 10YR

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4

Texture—dominantly very cobbly, extremely cobbly, very gravelly, or extremely gravelly clay loam or very gravelly sandy clay loam, but very cobbly or very gravelly loam in some pedons

Structure—subangular blocky, angular blocky, or massive

**Colbar Series***Depth class:* Moderately deep*Drainage class:* Well drained*Parent material:* Residuum and colluvium derived from rhyolitic and andesitic rock*Positions on landscape:* Foothills*Slope:* 15 to 50 percent*Mean annual precipitation:* About 9 inches*Mean annual temperature:* About 48 degrees F**Taxonomic class:** Fine-loamy, mixed, mesic Xerollic Haplargids**Typical Pedon**

About 10 percent of the surface is covered with pebbles and 30 percent with cobbles.

A—0 to 3 inches; pale brown (10YR 6/3) very cobbly loam, dark brown (10YR 4/3) moist; weak very thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium roots; common very fine vesicular and tubular pores; 15 percent pebbles and 20 percent cobbles; moderately alkaline (pH 8.2); clear wavy boundary.

BA—3 to 8 inches; yellowish brown (10YR 5/4) gravelly loam, dark yellowish brown (10YR 4/4) moist; weak very fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium and coarse roots; common very fine and fine tubular pores; 10 percent pebbles and 5 percent cobbles; moderately alkaline (pH 8.2); clear wavy boundary.

Bt—8 to 22 inches; yellowish brown (10YR 5/4) cobbly clay loam, dark yellowish brown (10YR 4/4) moist; moderate very fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots and few medium and coarse roots; common very fine and fine tubular pores; many thin clay films in pores and on peds; 5 percent pebbles, 10 percent cobbles, and 5 percent stones; moderately alkaline (pH 8.2); abrupt wavy boundary.

Bk—22 to 26 inches; yellowish brown (10YR 5/4) cobbly loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots and few medium and coarse roots; common very fine and fine tubular pores; 5 percent pebbles, 10 percent cobbles, and 5 percent stones; few thin slightly effervescent lime coatings on the underside of rock fragments; noneffervescent in matrix; moderately alkaline (pH 8.4); abrupt wavy boundary.

2R—26 inches; fractured, rhyolitic tuff.

**Typical Pedon Location***Soil name and map unit in which located:* Colbar very cobbly loam, 30 to 50 percent slopes, in Old Camp-Rock outcrop-Colbar association, strongly sloping  
*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 30 miles southwest of Battle Mountain; about 1,600 feet north and 1,700 feet east of the southwest corner of sec. 11. T. 26 N., R. 42 E.**Range in Characteristics***Soil moisture content:* Dry in summer and fall, moist late in winter and in spring*Average annual soil temperature:* 48 to 52 degrees F*Depth to bedrock:* 20 to 40 inches*Combined thickness of the A and Bt horizons:* 11 to 24 inches*Other characteristics:* Bk horizon that has thin lime coatings on the underside of rock fragments present below the Bt horizon in some pedons*Control section:*

Content of clay—25 to 35 percent

Content of rock fragments—15 to 35 percent, mainly pebbles and cobbles

*A horizon:*

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3

Structure—weak or moderate, very fine to medium, and subangular blocky; or weak or moderate, very thin to medium, and platy

Reaction—mildly alkaline or moderately alkaline

*Bt horizon:*

Value—5 or 6 dry, 3 to 5 moist

Chroma—3 or 4

Structure—weak to strong, very fine, fine, or medium, and subangular blocky

Texture—cobbly loam, cobbly clay loam, or gravelly clay loam

Reaction—mildly alkaline or moderately alkaline

*C and Bk horizons (when present):*

Value—5 to 7 dry, 4 or 5 moist

Chroma—3 or 4

Texture—gravelly loam or cobbly loam

**Coztur Series***Depth class:* Shallow*Drainage class:* Well drained*Parent material:* Residuum derived from volcanic and tuffaceous rock*Positions on landscape:* Crests and side slopes of mountains and hills*Slope:* 2 to 30 percent*Mean annual precipitation:* About 11 inches*Mean annual temperature:* About 43 degrees F**Taxonomic class:** Loamy, mixed, frigid Lithic Xerollic Haplargids**Typical Pedon**

About 10 percent of the surface is covered with pebbles.

A1—0 to 3 inches; light brownish gray (10YR 6/2) loam, very dark grayish brown (10YR 3/2) moist; moderate thick platy structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots and few medium roots; common fine and medium vesicular pores; 10 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary.

A2—3 to 7 inches; light brownish gray (10YR 6/2) loam, dark grayish brown (10YR 4/2) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common fine and medium tubular pores; 5 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary.

BA—7 to 11 inches; light brownish gray (2.5Y 6/2) loam, dark grayish brown (10YR 4/2) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common fine and medium tubular pores; 5 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary.

Bt—11 to 17 inches; light brownish gray (10YR 6/2) loam, dark grayish brown (10YR 4/2) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common fine tubular pores; common thin clay films on peds and lining pores; 10 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary.

R—17 inches; unweathered tuff.

**Typical Pedon Location**

*Soil name and map unit in which located:* Coztur loam, 2 to 8 percent slopes, in Coztur-Genaw association  
*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 38 miles southwest of Battle Mountain; about 1,270 feet south and 250 feet west of the northeast corner of sec. 16, T. 27 N., R. 41 E.

**Range in Characteristics***Soil moisture content:* Dry in summer and fall, moist in winter and spring*Average annual soil temperature:* 43 to 46 degrees F*Depth to bedrock:* 14 to 20 inches*Reaction:* Neutral or mildly alkaline*A horizon:*

Value—6 or 7 dry, 3 or 4 moist

Chroma—2 or 3

*BA horizon:*

Hue—2.5Y or 10YR

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 to 4

*Bt horizon:*

Hue—2.5Y or 10YR

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 to 4

Content of clay—22 to 35 percent

Texture—loam or clay loam

Content of rock fragments—less than 15 percent, mainly pebbles

**Creemon Series***Depth class:* Very deep*Drainage class:* Well drained*Parent material:* Silty alluvium that is derived from various kinds of rock and includes some volcanic ash*Positions on landscape:* Fan skirts, inset fans, beach terraces*Slope:* 0 to 2 percent*Mean annual precipitation:* About 7 inches*Mean annual temperature:* About 49 degrees F**Taxonomic class:** Coarse-silty, mixed, mesic Duric Camborthids**Typical Pedon**

A<sub>1</sub>—0 to 6 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; strong thin platy structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine and few fine roots; many fine vesicular pores and many very fine tubular

pores; moderately alkaline (pH 8.0); clear wavy boundary.

A2—6 to 10 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; moderate medium platy structure; hard, very friable, slightly sticky and plastic; many very fine and few fine roots; many very fine tubular pores; moderately alkaline (pH 8.4); clear wavy boundary.

Bw—10 to 15 inches; very pale brown (10YR 7/3) silt loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; many very fine and few fine roots; common very fine tubular pores; strongly alkaline (pH 8.6); abrupt irregular boundary.

Bqk1—15 to 21 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine tubular pores; 25 percent weak durinodes 10 to 25 millimeters in diameter; 50 percent discontinuous, hard, firm, brittle, weakly silica-cemented lenses 1 to 6 inches thick; strongly effervescent; common fine lime filaments; strongly alkaline (pH 8/6); clear wavy boundary.

Bqk2—21 to 28 inches; very pale brown (10YR 7/3) very fine sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky and slightly plastic; many very fine and few fine and medium roots; common very fine tubular pores; 35 percent weak and moderately strong durinodes 20 to 35 millimeters in diameter; common fine lime filaments; strongly effervescent; strongly alkaline (pH 8.8); gradual smooth boundary.

Bqk3—28 to 45 inches; very pale brown (10YR 7/3) and yellowish brown (10YR 5/4) silt loam, dark yellowish brown (10YR 4/4) and brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and slightly plastic; common very fine roots and few fine and medium roots; few very fine tubular pores; 25 percent weak and moderately strong durinodes 15 to 30 millimeters in diameter; few fine lime filaments; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary.

C—45 to 62 inches; light yellowish brown (10YR 6/4) gravelly very fine sandy loam, dark brown (10YR 3/3) moist; massive; soft, very friable, nonsticky and slightly plastic; common very fine roots; common very fine interstitial and tubular pores; 15 percent flat and rounded pebbles that are 2 to 30 millimeters in size; strongly effervescent; strongly alkaline (pH 8.6).

#### Typical Pedon Location

Map unit in which located: Creemon silt loam, 0 to 2 percent slopes

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 40 miles southwest of Battle Mountain; about 2,400 feet north and 1,250 feet east of the southwest corner of sec. 15, T. 26 N., R. 43 E.

#### Range in Characteristics

*Soil moisture content:* Usually dry, but moist in some part for short periods from October through May

*Average annual soil temperature:* 48 to 52 degrees F

*Combined thickness of the A and Bw horizons:* 11 to 15 inches

*Depth to the Bqk horizon:* 11 to 20 inches

*Other characteristics:* Lenses of volcanic ash in the lower part in some pedons; as much as 20 percent pebbles at a depth of more than 40 inches in some pedons; continuous, weakly silica-cemented layer at a depth of 40 to 55 inches in some pedons; generally moderately or strongly affected by salt and sodium below a depth of 20 to 30 inches, but moderately or strongly affected by salt and sodium throughout in some pedons

#### Control section:

Content of clay—8 to 18 percent

Texture—stratified silt loam to very fine sandy loam

Reaction—moderately alkaline or strongly alkaline

#### A horizon:

Value—6 or 7 dry, 3 or 4 moist

Chroma—2 or 3

Consistence—soft or slightly hard, nonsticky or slightly sticky, slightly plastic or plastic

Effervescence—noneffervescent or slightly effervescent

#### Bw horizon:

Value—6 or 7 dry

Chroma—2 or 3

Structure—thin and platy, or massive

Consistence—soft or slightly hard, nonsticky or slightly sticky, slightly plastic or plastic

#### Bqk horizon:

Value—5 to 7 dry

Chroma—2 to 4

Consistence—soft or slightly hard, nonsticky or slightly sticky

Effervescence—strongly effervescent or violently effervescent

Other characteristics—20 to 40 percent durinodes; 3- to 10-inch-thick layer in many pedons that is 20 to 60 percent discontinuous, weakly silica-cemented lenses and is between depths of 11 and 29 inches



## Cren Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Silty alluvium that is derived from various kinds of rock and includes some volcanic ash

*Positions on landscape:* Fan skirts, inset fans

*Slope:* 0 to 2 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 49 degrees F

**Taxonomic class:** Coarse-silty, mixed (calcareous), mesic Durorthidic Torriorthents

### Typical Pedon

- A—0 to 7 inches; light brownish gray (2.5Y 6/2) silt loam, dark grayish brown (2.5Y 4/2) moist; moderate very thin and thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many fine vesicular pores and many very fine interstitial and tubular pores; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary.
- Bk1—7 to 18 inches; light gray (2.5Y 7/2) silt loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; common very fine interstitial and tubular pores; violently effervescent; common fine filaments of lime; 2 percent small, weak durinodes; strongly alkaline (pH 8.6); gradual smooth boundary.
- Bk2—18 to 26 inches; light gray (10YR 7/2) silt loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine tubular pores; 2 percent weak durinodes; violently effervescent; few fine filaments of lime; strongly alkaline (pH 8.6); abrupt smooth boundary.
- Bqk1—26 to 29 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine interstitial and tubular pores; 30 percent weak, discontinuous, silica-cemented lenses; 2 percent small durinodes; violently effervescent; common medium filaments of lime; strongly alkaline (pH 8.8); abrupt smooth boundary.
- Bqk2—29 to 49 inches; very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine tubular pores; few fine horizontal lenses of volcanic ash; 30 percent weak durinodes 5 to 15 millimeters in diameter; violently effervescent; few fine filaments

of lime; strongly alkaline (pH 8.8); clear wavy boundary.

Bqk3—49 to 60 inches; pale brown (10YR 6/3) silt loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, slightly sticky and plastic; many very fine roots; many very fine tubular pores; 20 percent weak and moderately strong durinodes 10 to 30 millimeters in diameter; violently effervescent; common fine filaments of lime; strongly alkaline (pH 8.6).

### Typical Pedon Location

*Map unit in which located:* Cren silt loam

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 62 miles southwest of Battle Mountain; about 2,700 feet west and 2,200 feet south of the northeast corner of sec. 34, T. 25 N., R. 40 E.

### Range in Characteristics

*Soil moisture content:* Usually dry, but moist in some part for short periods from October through May

*Average annual soil temperature:* 48 to 53 degrees F

*Depth to the Bqk horizon:* 15 to 30 inches

*Reaction:* Moderately alkaline or strongly alkaline

*Other characteristics:* Lenses of volcanic ash present in the lower part in some pedons

*Control section:*

Texture—averages silt loam that is less than 15 percent fine sand or coarser textured material  
Content of clay—8 to 18 percent

*A horizon:*

Hue—10YR or 2.5Y

Value—6 or 7 dry, 3 or 4 moist

Chroma—2 or 3

Structure—platy, prismatic, or massive

*Bk horizon:*

Value—5 to 7 dry

Chroma—2 to 4

Texture—dominantly silt loam, but common thin strata of very fine sandy loam or fine sandy loam in some pedons

Consistence—soft or slightly hard (dry), nonsticky or slightly sticky (wet)

*Bqk horizon:*

Value—5 to 7 dry

Chroma—2 to 4

Texture—dominantly silt loam, but common thin strata of very fine sandy loam or fine sandy loam in some pedons

Consistence—soft or slightly hard (dry), nonsticky or slightly sticky (wet)

Other characteristics—20 to 40 percent weakly or

moderately strongly cemented durinodes; 3- to 10-inch-thick layer in some pedons that is 20 to 50 percent discontinuous and weakly silica-cemented and is at a depth of 15 to 30 inches

### **Davey Series**

*Depth class:* Very deep

*Drainage class:* Somewhat excessively drained

*Parent material:* Alluvium derived from various kinds of rock

*Positions on landscape:* Sand sheets

*Slope:* 0 to 4 percent

*Mean annual precipitation:* About 9 inches

*Mean annual temperature:* About 49 degrees F

**Taxonomic class:** Sandy, mixed, mesic Xerollic Camborthids

#### **Typical Pedon**

A—0 to 5 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 3/3) moist; weak medium prismatic structure parting to moderate thin and medium platy; slightly hard, very friable, nonsticky and slightly plastic; common very fine random roots and few fine horizontal roots; many very fine vesicular, interstitial, and tubular pores; neutral (pH 7.4); clear wavy boundary.

Bw—5 to 13 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and slightly plastic; common very fine random roots and common fine and medium oblique and horizontal roots; common very fine vesicular, interstitial, and tubular pores; mildly alkaline (pH 7.6); clear wavy boundary.

C—13 to 20 inches; light gray (10YR 7/2) loamy fine sand, brown (10YR 4/3) moist; soft, very friable, nonsticky and nonplastic; many very fine random roots and very few fine and medium oblique roots; common very fine vesicular and interstitial pores and few very fine tubular pores; 3 percent rounded pebbles 2 to 10 millimeters in diameter; slightly effervescent; strongly alkaline (pH 8.5); clear wavy boundary.

Ck1—20 to 29 inches; pale brown (10YR 6/3) loamy fine sand, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine random roots and very few fine and few medium oblique roots; common very fine vesicular and interstitial pores; 3 percent rounded pebbles 2 to 15 millimeters in diameter; few fine lime filaments; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary.

Ck2—29 to 41 inches; very pale brown (10YR 7/3)

loamy fine sand, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine random roots and very fine and medium oblique and vertical roots; common very fine vesicular and interstitial pores; 2 percent weak and very weak durinodes 5 to 10 millimeters in diameter; 10 percent 2- to 30-millimeter, flat and rounded, partially lime-coated pebbles; common fine lime filaments; strongly effervescent; strongly alkaline (pH 8.8); gradual wavy boundary.

Ck3—41 to 60 inches; very pale brown (10YR 7/3) loamy fine sand, yellowish brown (10YR 5/4) moist; few fine faint iron mottles that are brownish yellow (10YR 6/6) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine random roots and very few fine vertical roots; common very fine vesicular and interstitial pores; 10 percent weak and very weak durinodes 5 to 30 millimeters in diameter; 5 percent rounded, 2- to 30-millimeter, partially lime-coated pebbles; slightly effervescent in matrix; strongly alkaline (pH 8.8).

#### **Typical Pedon Location**

*Map unit in which located:* Davey fine sandy loam

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 15 miles northwest of Battle Mountain; about 60 feet south and 2,900 feet west of the northeast corner of sec. 9, T. 34 N., R. 45 E.

#### **Range in Characteristics**

*Soil moisture content:* Moist in winter and spring, dry in May through October

*Average annual soil temperature:* 47 to 53 degrees F

*Combined thickness of the A and Bw horizons:* 11 to 23 inches

*Depth to lime accumulation:* 11 to 24 inches

*Depth to gypsum crystals (in some pedons):* More than 20 inches

*Other characteristics:* Gypsum crystals at a depth of more than 20 inches in some pedons; continuous, weak or strong, silica cementation below a depth of 50 inches in some pedons; strata of unconformable very fine sandy loam or silt loam below a depth of 40 inches in some pedons

*Control section:*

Content of clay—5 to 10 percent

Content of rock fragments—as much as 30 percent, but averages less than 15 percent

*A horizon:*

Hue—10YR or 2.5Y

Value—5 or 6 dry (value of more than 5.5 occurs when the upper 7 inches is mixed); 3 or 4 moist

Chroma—1 to 3

Reaction—neutral or mildly alkaline

*Bw horizon:*

Hue—10YR or 2.5Y

Value—5 to 7 dry, 3 to 5 moist

Chroma—2 to 4

Texture—dominantly loam, fine sandy loam, or sandy loam, but gravelly sandy loam in the lower part in some pedons

Structure—prismatic or massive

Reaction—neutral to moderately alkaline

*C and Ck horizons:*

Hue—10YR or 2.5Y

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 to 4

Texture—dominantly fine sand, loamy fine sand, or loamy sand, but thin strata of fine sandy loam or coarse sand in some pedons

Reaction—moderately alkaline or strongly alkaline

Effervescence (Ck horizon)—slightly effervescent to violently effervescent

Other characteristics—lime in few or common filaments or as partial coatings on rock fragments; as much as 10 percent weakly cemented durinodes at a depth of more than 20 inches; relict mottles at a depth of more than 40 inches in some pedons

loam, dark brown (10YR 3/3) moist; moderate fine and very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and very fine roots; common fine and very fine interstitial and tubular pores; 35 percent pebbles and 5 percent cobbles; neutral (pH 7.2); clear smooth boundary.

Bw—11 to 24 inches; yellowish brown (10YR 5/4) very gravelly loam, dark yellowish brown (10YR 3/4) moist; moderate fine angular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; common fine and very fine roots; common fine and very fine interstitial and tubular pores; 45 percent pebbles; mildly alkaline (pH 7.6); clear smooth boundary.

C—24 to 28 inches; yellowish brown (10YR 5/4) extremely cobbly loam, dark yellowish brown (10YR 4/4) moist; weak fine and very fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; few fine and very fine roots; common very fine interstitial pores; 40 percent pebbles and 30 percent cobbles; slightly effervescent; moderately alkaline (pH 8.0); abrupt wavy boundary.

R—28 inches; andesite.

**Typical Pedon Location**

*Soil name and map unit in which located:* Decram very gravelly loam, 15 to 30 percent slopes, extremely stony, in Decram-Hapgood-Chad association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 20 miles northeast of Austin, in the Simpson Park Mountains; about 2,000 feet east and 2,300 feet north of the southwest corner of sec. 30, T. 21 N., R. 48 E.

**Range in Characteristics**

*Soil moisture content:* Moist in winter and spring, dry in summer and early in fall for 60 to 90 days

*Average annual soil temperature:* 42 to 45 degrees F

*Thickness of the mollic epipedon:* 7 to 15 inches

*Average summer soil temperature:* 55 to 59 degrees F

*Depth to bedrock:* 20 to 40 inches

*Control section (when mixed):*

Content of clay—18 to 25 percent

Content of angular rock fragments—35 to 70 percent

*A horizon:*

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3

Reaction—neutral or mildly alkaline

*Bw horizon:*

Value—5 or 6 dry, 3 or 4 moist

**Decram Series**

*Depth class:* Moderately deep

*Drainage class:* Well drained

*Parent material:* Residuum derived from quartzite, chert, and volcanic rock

*Positions on landscape:* Shoulder slopes and the upper side slopes of mountains

*Slope:* 15 to 50 percent

*Mean annual precipitation:* About 18 inches

*Mean annual temperature:* About 42 degrees F

**Taxonomic class:** Loamy-skeletal, mixed Typic Cryoborolls

**Typical Pedon**

From 3 to 15 percent of the surface is covered with stones, 10 percent with cobbles, and 40 percent with pebbles.

A1—0 to 6 inches; dark grayish brown (10YR 4/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine and very fine roots; common fine and very fine interstitial pores; 35 percent pebbles and 10 percent cobbles; neutral (pH 7.2); clear smooth boundary.

A2—6 to 11 inches; brown (10YR 4/3) very gravelly

Chroma—3 or 4

Texture—very gravelly loam or very cobbly loam

Structure—angular blocky or subangular blocky

Reaction—neutral or mildly alkaline

*C horizon:*

Hue—10YR or 7.5YR

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4

Texture—very gravelly loam, extremely gravelly loam, very cobbly loam, or extremely cobbly loam

Reaction—mildly alkaline or moderately alkaline

Other characteristics—coatings of lime on the underside of rock fragments in some pedons

## **Defler Series**

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Alluvium that is derived from various kinds of rock and includes some loess and volcanic ash

*Positions on landscape:* Inset fans

*Slope:* 0 to 4 percent

*Mean annual precipitation:* About 9 inches

*Mean annual temperature:* About 47 degrees F

**Taxonomic class:** Loamy-skeletal, mixed (calcareous), mesic Typic Torriorthents

### **Typical Pedon**

About 30 percent of the surface is covered with pebbles.

A—0 to 4 inches; very pale brown (10YR 7/3) gravelly fine sandy loam, dark brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; common very fine vesicular pores; 30 percent pebbles; slightly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

Bk1—4 to 11 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; 30 percent pebbles and 5 percent cobbles; thin lime coatings on the underside of pebbles; strongly effervescent; moderately alkaline (pH 8.0); clear wavy boundary.

Bk2—11 to 16 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, slightly sticky and nonplastic; common very fine and fine

roots; common very fine interstitial pores; 45 percent pebbles, 5 percent cobbles, and 5 percent stones; thin lime coatings on rock fragments; strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Bqk—16 to 21 inches; very pale brown (10YR 7/3) very gravelly sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine roots; common very fine interstitial pores; 15 percent weakly silica-cemented durinodes 5 to 20 millimeters in diameter; 45 percent pebbles, 5 percent cobbles, and 5 percent stones; disseminated lime and common medium lime coatings on rock fragments; strongly effervescent; strongly alkaline (pH 8.6); clear wavy boundary.

B'k1—21 to 34 inches; pale brown (10YR 6/3) very gravelly sandy loam, dark brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; many very fine and fine roots; common very fine interstitial pores; 50 percent pebbles and 5 percent cobbles; common thin lime coatings on the underside of rock fragments; strongly effervescent; mildly alkaline (pH 7.8); clear wavy boundary.

B'k2—34 to 38 inches; pale brown (10YR 6/3) very gravelly sandy loam, dark brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few fine tubular pores; 45 percent pebbles; noneffervescent in matrix and common fine slightly effervescent lime filaments; mildly alkaline (pH 7.8); clear wavy boundary.

2C—38 to 60 inches; pale brown (10YR 6/3), stratified extremely gravelly coarse sand and very gravelly sandy loam, dark brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; common very fine and fine roots; common very fine interstitial pores; 50 percent pebbles and 5 percent cobbles; mildly alkaline (pH 7.8).

### **Typical Pedon Location**

*Soil name and map unit in which located:* Defler gravelly fine sandy loam, 0 to 2 percent slopes, in Defler-Orovada association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 24 miles southwest of Austin, in the Smith Creek Valley; about 1,200 feet west and 225 feet north of the southeast corner of sec. 35, T. 17 N., R. 40 E.

### **Range in Characteristics**

*Soil moisture content:* Moist in some part in November through May; dry in June through October

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to 2C horizon:* 35 to 45 inches

*Reaction:* Mildly alkaline to strongly alkaline

*Control section:*

Content of clay—8 to 18 percent

Texture—averages very gravelly fine sandy loam, very gravelly loam, or very gravelly sandy loam

Content of rock fragments—35 to 60 percent, mainly pebbles

*A horizon:*

Value—5 to 7 dry, 3 to 5 moist

Chroma—2 or 3

Structure—platy or granular

*Bk horizon:*

Value—6 or 7 dry, 3 to 5 moist

Chroma—2 to 4

Other characteristics—filaments or coatings of lime on rock fragments; strata that are 5 to 15 percent weakly silica-cemented durinodes present at a depth of more than 12 inches in some pedons

*2C horizon:*

Value—6 or 7 dry, 4 or 5 moist

Chroma—3 or 4

Texture—stratified very gravelly sandy loam to extremely gravelly coarse sand

Content of rock fragments—50 to 70 percent, mainly pebbles

## ***Desatoya Series***

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Alluvium derived from various kinds of rock

*Positions on landscape:* Fan piedmont remnants

*Slope:* 2 to 50 percent

*Mean annual precipitation:* About 11 inches

*Mean annual temperature:* About 47 degrees F

**Taxonomic class:** Clayey over loamy-skeletal, montmorillonitic, mesic Durixerollic Haplargids

### **Typical Pedon**

About 50 percent of the surface is covered with pebbles.

A—0 to 3 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, very friable, sticky and plastic; few very fine roots; many very fine vesicular pores; 35 percent pebbles; mildly alkaline (pH 7.8); abrupt smooth boundary.

Bt1—3 to 6 inches; brown (10YR 5/3) clay loam, dark

yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; soft, very friable, very sticky and very plastic; common very fine and fine roots; many very fine interstitial pores; few thin clay films bridging sand grains and on faces of peds; 5 percent pebbles; mildly alkaline (pH 7.6); clear wavy boundary.

Bt2—6 to 10 inches; light yellowish brown (10YR 6/4) gravelly clay, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to moderate medium angular blocky; hard, friable, very sticky and very plastic; common very fine, fine, and medium roots; common very fine interstitial and tubular pores; many thin and common moderately thick clay films on faces of peds; 30 percent pebbles; mildly alkaline (pH 7.8); clear wavy boundary.

Btk—10 to 14 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, very sticky and very plastic; common very fine and fine roots and few medium roots; few very fine tubular and interstitial pores; common thin clay films on faces of peds; 30 percent pebbles; disseminated lime and common fine lime concretions; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary.

Bqk1—14 to 23 inches; very pale brown (10YR 7/3), continuous, weakly silica-cemented very gravelly sandy loam, light yellowish brown (10YR 6/4) moist; massive; hard, firm, nonsticky and nonplastic; few fine and medium roots; few very fine tubular pores; 40 percent pebbles; 30 percent discontinuous strongly silica-cemented masses; disseminated lime and many fine lime concretions; violently effervescent; strongly alkaline (pH 8.6); clear smooth boundary.

Bqk2—23 to 38 inches; very pale brown (10YR 8/3), continuous, weakly silica-cemented very gravelly sandy loam, very pale brown (10YR 7/4) moist; massive; hard, firm, nonsticky and nonplastic; common very fine and fine roots; many very fine interstitial pores; 55 percent pebbles; 20 percent discontinuous strongly silica-cemented lenses and 20 percent horizontal lenses of very gravelly loamy sand as much as 2 inches thick; many fine concretions and seams of lime; violently effervescent; strongly alkaline (pH 9.0); clear smooth boundary.

Bqk3—38 to 60 inches; very pale brown (10YR 8/3) very gravelly loamy sand, very pale brown (10YR 7/4) moist; single grain; loose, nonsticky and

nonplastic; few very fine and fine roots; many very fine interstitial pores; 55 percent pebbles; 30 percent discontinuous strongly silica-cemented masses; many fine concretions and seams of lime; violently effervescent; strongly alkaline (pH 9.0).

#### Typical Pedon Location

*Soil name and map unit in which located:* Desatoya very gravelly loam, 8 to 15 percent slopes, in Desatoya-Pineval-Grassval association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 28 miles west of Austin; about 2,000 feet east and 1,000 feet south of the northwest corner of sec. 10, T. 18 N., R. 39 E.

#### Range in Characteristics

*Soil moisture content:* Usually dry early in June through October; moist in winter and spring

*Average annual soil temperature:* 48 to 52 degrees F

*Depth to weak cementation:* 14 to 20 inches

*Depth to carbonates:* 10 to 20 inches

#### A horizon:

Value—5 or 6 dry, 3 to 5 moist

Chroma—2 or 3

Structure—weak or moderate and subangular blocky or platy

Reaction—neutral or mildly alkaline

#### Bt horizon:

Value—5 or 6 dry, 3 to 5 moist

Chroma—3 or 4 moist

Texture—gravelly clay loam or gravelly clay

Content of clay—35 to 45 percent

Content of rock fragments—20 to 30 percent, mainly pebbles

Structure—moderate or strong, fine or medium, and subangular blocky

Reaction—mildly alkaline or moderately alkaline

#### Bqk horizon:

Texture—stratified extremely gravelly sandy loam to very gravelly loamy sand, but averages very gravelly or extremely gravelly sandy loam

Content of clay—8 to 18 percent

Content of rock fragments—40 to 80 percent, mainly pebbles

Consistence—hard or very hard (dry), firm or slightly brittle (moist)

Reaction—moderately alkaline to very strongly alkaline

Other characteristics—dominantly continuously weakly silica-cemented, but discontinuous, weakly or strongly silica-cemented strata present below a depth of 38 inches

### Desatoya Variant

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Alluvium derived from various kinds of rock

*Positions on landscape:* Side slopes of deeply dissected fan piedmont remnants

*Slope:* 4 to 50 percent

*Mean annual precipitation:* About 9 inches

*Mean annual temperature:* About 49 degrees F

**Taxonomic class:** Fine-loamy, mixed, mesic Xerollic Haplargids

#### Typical Pedon

About 45 percent of the surface is covered with pebbles and 5 percent with cobbles.

A—0 to 3 inches; pale brown (10YR 6/3) very gravelly sandy loam, dark brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, very friable, sticky and plastic; common very fine and fine roots; common very fine vesicular and interstitial pores; 35 percent pebbles; slightly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

Bt—3 to 8 inches; pale brown (10YR 6/3) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate coarse subangular blocky structure; slightly hard, very friable, very sticky and very plastic; common very fine and fine roots; common very fine tubular pores; common thin clay films on faces of peds; 20 percent pebbles; slightly effervescent; moderately alkaline (pH 8.4); clear irregular boundary.

Btk—8 to 13 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; 25 percent discontinuous, weakly lime-cemented masses; few thin clay films bridging sand grains; 35 percent pebbles; few thin lime pendants on the underside of coarse fragments; strongly effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary.

Bk1—13 to 21 inches; very pale brown (10YR 7/3) very gravelly sandy loam, brown (10YR 5/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; few very fine roots; few very fine tubular pores; 25 percent discontinuous, weakly lime-cemented masses; 50 percent pebbles; thin lime coatings on the underside of coarse fragments;

strongly effervescent; strongly alkaline (pH 8.6); clear wavy boundary.

**Bk2**—21 to 26 inches; very pale brown (10YR 7/3), continuous, weakly lime-cemented gravelly sandy loam, brown (10YR 5/3) moist; massive; hard, friable, nonsticky and nonplastic; few very fine roots; few very fine tubular pores; 20 percent pebbles; thin to medium lime coatings on coarse fragments; strongly effervescent; strongly alkaline (pH 8.6); abrupt wavy boundary.

**Bk3**—26 to 50 inches; pale brown (10YR 6/3) very gravelly sand, dark brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; many very fine interstitial pores; 50 percent pebbles; common thin lime coatings and pendants on the underside of coarse fragments; strongly effervescent; strongly alkaline (pH 8.8).

#### Typical Pedon Location

*Soil name and map unit in which located:* Desatoya Variant very gravelly sandy loam, 15 to 50 percent slopes, in Spike-Desatoya Variant-Grassval association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 32 miles north of Austin; about 2,000 feet north and 1,000 feet west of the southeast corner of sec. 36, T. 23 N., R. 43 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in summer and early in fall

*Average annual soil temperature:* 47 to 49 degrees F

*Depth to the base of the Btk horizon:* 10 to 18 inches

*Depth to carbonates:* 0 to 10 inches

#### Control section:

Texture (when mixed)—dominantly gravelly clay loam or gravelly sandy clay loam, but gravelly loam in some pedons

Content of clay—25 to 35 percent

Content of rock fragments (when mixed)—averages 15 to 35 percent, mainly pebbles, but as much as 45 percent in a single layer

#### A horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3

Effervescence—slightly effervescent or noneffervescent

#### Bt and Btk horizons:

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4

Effervescence—dominantly noneffervescent or slightly effervescent in the upper part, strongly effervescent in the lower part

Reaction—mildly alkaline or moderately alkaline

#### Bk horizon:

Hue—10YR or 2.5Y

Value—6 or 7 dry, 4 or 5 moist

Chroma—3 or 4

Reaction—moderately alkaline or strongly alkaline

Other characteristics—dominantly as much as 60 percent discontinuous, weak lime cementation, but continuous, weak lime cementation in some pedons

### Dewar Series

*Depth class:* Shallow to duripan

*Drainage class:* Well drained

*Parent material:* Loess and mixed silty alluvium that includes some volcanic ash

*Positions on landscape:* Fan piedmont remnants, mountain valley fan remnants

*Slope:* 2 to 8 percent

*Mean annual precipitation:* About 9 inches

*Mean annual temperature:* About 46 degrees F

**Taxonomic class:** Loamy, mixed, mesic, shallow Xerollic Durargids

#### Typical Pedon

**A1**—0 to 2 inches; light brownish gray (10YR 6/2) gravelly loam, very dark brownish gray (10YR 3/2) moist; moderate very thick platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine vesicular pores; 15 percent pebbles; mildly alkaline (pH 7.4); abrupt smooth boundary.

**A2**—2 to 4 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; moderate fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and common very fine roots; many very fine interstitial pores; 10 percent pebbles; mildly alkaline (pH 7.4); clear smooth boundary.

**Bt**—4 to 8 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; common fine and medium roots; common fine interstitial pores; common thin clay films on peds and bridging mineral grains; 15 percent pebbles; mildly alkaline (pH 7.6); gradual wavy boundary.

**Btk**—8 to 14 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, firm, sticky and plastic; common fine

and medium roots and few coarse roots; common fine interstitial pores; common thin clay films on peds; 15 percent moderate durinodes 5 to 15 millimeters in diameter; 15 percent pebbles and 5 percent cobbles and pan fragments; few fine soft lime masses; noneffervescent in matrix; mildly alkaline (pH 7.8); abrupt wavy boundary.

**Bqkm**—14 to 50 inches; very pale brown (10YR 7/3), indurated duripan, yellowish brown (10YR 5/4) moist; moderately thick and thick platy structure; extremely hard, extremely firm; few roots along horizontal fractures; continuous, 2- to 6-millimeter-thick, brown (10YR 5/3), silica laminae on top and in horizontal bands throughout horizon, alternating with thin, strongly or weakly cemented strata in some pedons; violently effervescent; moderately alkaline (pH 8.6).

### Typical Pedon Location

*Map unit in which located:* Dewar gravelly loam, 2 to 8 percent slopes

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 12 miles east of Austin; about 150 feet east and 2,200 feet north of the southwest corner of sec. 12, T. 19 N., R. 45 E.

### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry early in June through October

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to indurated duripan:* 13 to 20 inches

#### *A horizon:*

Chroma—2 or 3

Structure—moderate or strong, very thin to thick, and platy; or moderate or strong, fine or medium, and granular

Reaction—neutral to moderately alkaline

#### *Bt horizon:*

Value—6 or 7 dry, 3 or 4 moist

Chroma—2 to 4 dry, 3 or 4 moist

Texture—gravelly silty clay loam or gravelly clay loam

Content of clay—27 to 35 percent

Content of rock fragments—15 to 30 percent, mainly pebbles

Structure—weak to strong, fine to coarse, and subangular blocky

Reaction—neutral to moderately alkaline

#### *Btqk horizon (when present):*

Content of clay—15 to 35 percent

Other characteristics—less than 30 percent weak or very weak durinodes

#### *Bqkm horizon:*

Structure—massive, or moderately thick or very thick and platy

Other characteristics—strongly cemented or discontinuously indurated strata below the duripan in some pedons; 1- to 3-inch-thick degraded duripan common on top in some pedons

## Duco Series

*Depth class:* Shallow

*Drainage class:* Well drained

*Parent material:* Residuum derived from rhyolite and andesite

*Positions on landscape:* Side slopes of mountains

*Slope:* 15 to 50 percent

*Mean annual precipitation:* About 12 inches

*Mean annual temperature:* About 48 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, mesic Lithic Argixerolls

### Typical Pedon

About 20 percent of the surface is covered with pebbles, 15 percent with cobbles, and 10 percent with stones.

**A1**—0 to 3 inches; brown (10YR 5/3) stony loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; 10 percent pebbles, 5 percent cobbles, and 5 percent stones; neutral (pH 7.0); abrupt smooth boundary.

**A2**—3 to 7 inches; brown (10YR 5/3) very cobbly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, sticky and plastic; common very fine and fine roots; many very fine and fine tubular pores; 20 percent pebbles, 15 percent cobbles, and 5 percent stones; neutral (pH 7.2); clear smooth boundary.

**Bt1**—7 to 15 inches; brown (10YR 5/3) very gravelly clay loam, dark brown (10YR 3/3) moist; moderate medium angular blocky structure; slightly hard, friable, very sticky and very plastic; common fine, medium, and coarse roots; common very fine and fine tubular pores; common thin and few thick clay films on faces of peds; 30 percent pebbles, 5 percent cobbles, and 5 percent stones; neutral (pH 7.2); clear wavy boundary.

**Bt2**—15 to 19 inches; yellowish brown (10YR 5/4) very cobbly clay loam, dark yellowish brown (10YR 3/4)



moist; strong medium angular blocky structure; hard, firm, very sticky and very plastic; few fine, medium, and coarse roots; common very fine tubular pores; common moderately thick clay films on faces of peds; 30 percent pebbles, 15 percent cobbles, and 5 percent stones; mildly alkaline (pH 7.4); abrupt irregular boundary.

R—19 inches; hard, fine, crystalline tuff.

#### Typical Pedon Location

*Soil name and map unit in which located:* Duco stony loam, 15 to 30 percent slopes, in Duco-Clan Alpine-Jung association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 38 miles southwest of Austin; in an unsectionalized area about 300 feet north and 1,300 feet east of the southwest corner of the assumed sec. 23, T. 15 N., R. 37 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter, dry in summer and fall

*Average annual soil temperature:* 50 to 53 degrees F

*Mollic epipedon:* 7 to 20 inches thick (commonly includes the upper part of the argillic horizon)

*Combined thickness of the A and Bt horizons:* 10 to 20 inches

*Depth to bedrock:* 10 to 20 inches

*Reaction:* Slightly acid to mildly alkaline

#### Control section:

Content of clay—27 to 35 percent

Content of rock fragments—35 to 75 percent, including 30 to 45 percent pebbles, 0 to 20 percent cobbles, and 0 to 40 percent stones (stones generally in the lower part)

#### A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3

Structure—weak or moderate, fine or medium, and granular or subangular blocky

#### Bt1 horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3

Texture—gravelly or very gravelly loam, sandy clay loam, or clay loam

Structure—subangular blocky or angular blocky

#### Bt2 horizon:

Hue—10YR or 7.5YR

Value—4 to 6 dry, 2 to 4 moist

Chroma—2 to 4

Structure—moderate or strong, fine or medium, and subangular blocky or angular blocky

### Eastwell Series

*Depth class:* Shallow to duripan

*Drainage class:* Well drained

*Parent material:* Old gravelly and cobbly alluvial deposits that include some loess

*Positions on landscape:* Summits and side slopes of fan piedmont remnants

*Slope:* 4 to 15 percent

*Mean annual precipitation:* About 8 inches

*Mean annual temperature:* About 48 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, mesic, shallow Haploxerollic Durorthids

#### Typical Pedon

A1—0 to 2 inches; light brownish gray (10YR 6/2) gravelly loam, brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; common fine roots; many fine vesicular pores; 20 percent pebbles; slightly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary.

A2—2 to 5 inches; light brownish gray (10YR 6/2) gravelly loam, brown (10YR 4/3) moist; weak thin platy structure; soft, very friable, slightly sticky and slightly plastic; common fine roots; 25 percent pebbles; slightly effervescent; strongly alkaline (pH 8.8); clear smooth boundary.

Bw—5 to 10 inches; light brownish gray (10YR 6/2) very gravelly loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; common very fine tubular pores; 40 percent pebbles; slightly effervescent; strongly alkaline (pH 9.0); clear wavy boundary.

Bqk—10 to 15 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; common very fine tubular pores; 40 percent pebbles; 30 percent durinodes; strongly effervescent; strongly alkaline (pH 9.0); abrupt wavy boundary.

Bqkm—15 to 17 inches; white (10YR 8/2), strongly cemented duripan, pale brown (10YR 6/3) moist; weak very thick platy structure; extremely hard, extremely firm; thin, discontinuous, silica lamellae on top; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Bk—17 to 60 inches; white (10YR 8/2) very gravelly loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; 40 percent pebbles and cobbles; strongly effervescent; strongly alkaline (pH 8.6).

**Typical Pedon Location**

*Soil name and map unit in which located:* Eastwell gravelly loam, 4 to 15 percent slopes, in Eastwell-Blackhawk-Pineval association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 0.9 mile west of Red Bird Mine; about 600 feet west and 300 feet south of the northeast corner of sec. 24, T. 22 N., R. 41 E.

**Range in Characteristics**

*Soil moisture content:* Moist in winter and spring, dry in June through October

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to the duripan:* 10 to 20 inches

*Control section:*

Content of clay—10 to 27 percent

Texture—sandy loam or loam

Content of rock fragments—35 to 50 percent, mainly pebbles

*A horizon:*

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3

Structure—platy, granular, or massive

Effervescence—noneffervescent or slightly effervescent

*Bw horizon:*

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3

Structure—weak or moderate and prismatic or subangular blocky

Effervescence—slightly effervescent to violently effervescent

*Bqkm horizon:*

Effervescence—strongly effervescent or violently effervescent

Other characteristics—common continuous, strong silica cementation; thin discontinuous silica lamellae absent in some pedons

*Bk horizon:*

Value—6 to 8 dry, 4 to 6 moist

Chroma—2 to 4

Texture—very gravelly loam or very cobbly loam

Content of rock fragments—35 to 60 percent, mainly pebbles and cobbles

Effervescence—strongly effervescent or violently effervescent

Other characteristics—common lime coatings on the underside of rock fragments; 10 to 40 percent durinodes or discontinuous, weak, lime and silica cementation

**Enko Series**

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Loamy alluvium that is derived mainly from various kinds of rock and includes some loess and volcanic ash

*Positions on landscape:* Fan aprons, fan skirts, inset fans

*Slope:* 0 to 8 percent

*Mean annual precipitation:* About 9 inches

*Mean annual temperature:* About 48 degrees F

**Taxonomic class:** Coarse-loamy, mixed, mesic Durixerollic Camborthids

**Typical Pedon**

A1—0 to 3 inches; pale brown (10YR 6/3) sandy loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine vesicular pores; 5 percent pebbles; neutral (pH 7.2); abrupt smooth boundary.

A2—3 to 6 inches; pale brown (10YR 6/3) sandy loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; common very fine tubular pores; 5 percent pebbles; neutral (pH 7.2); clear smooth boundary.

Bw—6 to 12 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; common very fine tubular pores; 5 percent pebbles; mildly alkaline (pH 7.4); clear smooth boundary.

Bq1—12 to 18 inches; light yellowish brown (10YR 6/4) sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; few very fine tubular pores; 40 percent discontinuous, weak, silica cementation and 20 percent strongly cemented durinodes 5 to 15 millimeters in diameter; 5 percent pebbles; mildly alkaline (pH 7.6); clear wavy boundary.

Bq2—18 to 30 inches; light yellowish brown (10YR 6/4), continuous, weakly silica-cemented sandy loam, dark yellowish brown (10YR 4/4) moist; massive; hard, firm, nonsticky and nonplastic; few very fine roots; common very fine tubular pores; 20 percent strongly cemented durinodes 10 to 25 millimeters in diameter; 10 percent pebbles; mildly alkaline (pH 7.6); clear wavy boundary.

**Bq3**—30 to 36 inches; light yellowish brown (2.5Y 6/4) sandy loam, olive brown (2.5Y 4/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; 40 percent strongly cemented durinodes 5 to 25 millimeters in diameter; 10 percent pebbles; moderately alkaline (pH 8.4); clear wavy boundary.

**Bqk**—36 to 60 inches; light yellowish brown (2.5Y 6/4), continuous, weakly silica-cemented fine sandy loam, olive brown (2.5Y 4/4) moist; massive; hard, firm, nonsticky and nonplastic; common very fine and fine roots; few very fine interstitial pores; 10 percent pebbles; many fine lime seams and threads; strongly effervescent; strongly alkaline (pH 8.8).

#### Typical Pedon Location

*Soil name and map unit in which located:* Enko sandy loam, 2 to 4 percent slopes, in Enko-Orovada association, gently sloping

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 6 miles southwest of Austin; about 1,650 feet north and 800 feet west of the southeast corner of sec. 20, T. 18 N., R. 43 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in June through October

*Average annual soil temperature:* 49 to 52 degrees F

*Combined thickness of the A and Bw horizons:* 12 to 30 inches

*Depth to continuous, weak cementation:* 14 to 30 inches

*Other characteristics:* Sandy strata or strata containing gypsum crystals present below a depth of 40 inches in some pedons; noneffervescent Bq horizon present above the Bqk horizon in some pedons

#### Control section:

Content of clay—10 to 18 percent

Content of rock fragments—0 to 15 percent pebbles

#### A horizon:

Hue—10YR or 2.5Y

Value—commonly 6 or 7 dry, but 5 dry in some pedons; 3 or 4 moist

Chroma—2 or 3

Structure—very fine or fine and granular, very thin to medium and platy, or massive

Consistence—slightly sticky or sticky, slightly plastic or plastic

Reaction—neutral to moderately alkaline

#### Bw horizon:

Value—5 to 7 dry, 3 to 5 moist

Chroma—2 to 4

Texture—dominantly loam, fine sandy loam, or

sandy loam, but strata of silt loam or clay loam in the upper part in some pedons

Structure—prismatic, angular blocky, subangular blocky, or massive

Consistence—slightly sticky or sticky, slightly plastic or plastic

Reaction—neutral to moderately alkaline, increasing in alkalinity with increasing depth

Other characteristics—calcareous in the lower part in some pedons

#### Bqk and Bq horizons (when present):

Hue—10YR, 2.5Y, or 5Y

Value—4 to 6 moist, 6 to 8 dry

Chroma—1 to 4 dry, 2 to 4 moist

Texture—loam, sandy loam, or fine sandy loam

Cementation—common continuous, weakly silica-cemented strata 10 to 40 inches thick, but 20 to 50 percent durinodes or 20 to 75 percent discontinuous, weakly silica-cemented strata in some pedons

Reaction—mildly alkaline to strongly alkaline, increasing in alkalinity with increasing depth

Other characteristics—common relict iron mottles or mica particles in many pedons; very gravelly or extremely gravelly strata common below a depth of 40 inches in some pedons

### Fenster Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Silty alluvium derived from highly calcareous sources

*Positions on landscape:* Stream terraces

*Slope:* 0 to 2 percent

*Mean annual precipitation:* About 10 inches

*Mean annual temperature:* About 45 degrees F

**Taxonomic class:** Fine-silty, mixed (calcareous), frigid Typic Torriorthents

#### Typical Pedon

**A1**—0 to 2 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; moderate medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; very few very fine and fine roots; many medium vesicular pores; slightly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary.

**A2**—2 to 5 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; soft, friable, slightly

sticky and slightly plastic; few very fine and fine roots; common very fine interstitial and tubular pores; slightly effervescent; strongly alkaline (pH 9.0); clear smooth boundary.

C1—5 to 10 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; moderate fine and very fine subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine roots; common very fine and fine interstitial and tubular pores; strongly effervescent; very strongly alkaline (pH 9.2); clear smooth boundary.

C2—10 to 18 inches; light yellowish brown (10YR 6/4) silty clay loam, yellowish brown (10YR 4/4) moist; common fine faint yellow (10YR 7/6) mottles, yellowish brown (10YR 5/6) moist; massive; hard, firm, very sticky and very plastic; common very fine and fine roots; common very fine interstitial and tubular pores; violently effervescent; very strongly alkaline (pH 9.4); gradual smooth boundary.

C3—18 to 32 inches; light yellowish brown (10YR 6/4) silty clay loam, yellowish brown (10YR 4/4) moist; common medium distinct pale yellow (2.5Y 7/4) mottles, light olive brown (2.5Y 5/4) moist; massive; hard, firm, sticky and plastic; common very fine and fine roots; common very fine interstitial and tubular pores; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary.

2C4—32 to 38 inches; very pale brown (10YR 7/3) very fine sandy loam that is high in content of volcanic ash, brown (10YR 5/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; many very fine interstitial pores; strongly effervescent; strongly alkaline (pH 8.4); abrupt smooth boundary.

3C5—38 to 60 inches; light yellowish brown (10YR 6/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; massive; hard, firm, sticky and plastic; few very fine and fine roots; few very fine and fine tubular pores; violently effervescent; strongly alkaline (pH 8.8).

#### Typical Pedon Location

*Soil name and map unit in which located:* Fenster silt loam in Fenster-Jesse Camp association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 34 miles southeast of Austin; about 200 feet north and 700 feet west of the southeast corner of sec. 2, T. 15 N., R. 47 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in June through October

*Average annual soil temperature:* 45 to 47 degrees F

#### Control section:

Content of clay—18 to 35 percent

Reaction—moderately alkaline to very strongly alkaline

Effervescence—dominantly strongly effervescent or violently effervescent, but slightly effervescent in the upper part in some pedons

#### A horizon:

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3

#### C horizon:

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 to 4

Texture—dominantly silt loam or silty clay loam, but strata of fine sandy loam or loam at a depth of more than 40 inches or very fine sandy loam volcanic ash at a depth of less than 40 inches in some pedons

Other characteristics—relict mottles at a depth of less than 40 inches in some pedons

### Filliran Series

*Depth class:* Moderately deep to duripan

*Drainage class:* Well drained

*Parent material:* Alluvium that is derived from volcanic and metamorphic rock and includes some loess

*Positions on landscape:* Fan piedmonts

*Slope:* 2 to 4 percent

*Mean annual precipitation:* About 9 inches

*Mean annual temperature:* About 48 degrees F

**Taxonomic class:** Fine, montmorillonitic, mesic Haploxerollic Nadurargids

#### Typical Pedon

About 10 percent of the surface is covered with pebbles.

A1—0 to 3 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium roots; many very fine and fine vesicular pores; 10 percent pebbles; mildly alkaline (pH 7.6); abrupt smooth boundary.

A2—3 to 7 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and medium roots; common very fine and medium tubular pores; 5 percent pebbles and 5 percent cobbles; mildly alkaline (pH 7.8); abrupt smooth boundary.

- E—7 to 9 inches; light brownish gray (10YR 6/2) gravelly silt loam, dark brown (10YR 4/3) moist; weak thick platy structure; hard, friable, slightly sticky and slightly plastic; common very fine and medium roots; common very fine and fine tubular pores; 15 percent pebbles and 5 percent cobbles; 20 percent bleached white (10YR 8/2) faces of peds; moderately alkaline (pH 8.0); abrupt wavy boundary.
- E/B—9 to 12 inches; pale brown (10YR 6/3) gravelly silt loam, dark brown (10YR 3/3) moist; strong fine subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; common thick clay films on faces of peds; 15 percent pebbles and 5 percent cobbles; 60 percent bleached white (10YR 8/2) faces of peds; moderately alkaline (pH 8.4); abrupt wavy boundary.
- 2B<sub>tn</sub>—12 to 20 inches; light yellowish brown (10YR 6/4) clay, dark yellowish brown (10YR 4/4) moist; strong medium prismatic structure; very hard, very firm, very sticky and very plastic; few very fine and fine roots; common very fine tubular pores; many thick clay films on faces of peds and in pores; 5 percent pebbles; slightly effervescent; strongly alkaline (pH 8.8); gradual wavy boundary.
- 2B<sub>tnk</sub>—20 to 28 inches; light yellowish brown (10YR 6/4) gravelly clay, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure parting to strong fine angular blocky; very hard, very firm, very sticky and very plastic; few very fine and fine roots; common very fine tubular pores; many thick clay films on faces of peds and in pores; 20 percent pebbles; common lime coatings on the underside of rock fragments; common medium threads and filaments of lime; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary.
- 2B<sub>tnqky</sub>—28 to 33 inches; light yellowish brown (10YR 6/4) gravelly clay, dark yellowish brown (10YR 4/4) moist; massive; very hard, very firm, very sticky and very plastic; few very fine and fine roots; common very fine tubular pores; common thick clay films on faces of peds and in pores; 20 percent discontinuous, weak, silica cementation; 25 percent pebbles and 5 percent cobbles; many medium filaments of lime; common medium soft gypsum masses; strongly effervescent; strongly alkaline (pH 8.6); clear wavy boundary.
- 2B<sub>qkm</sub>—33 to 60 inches; pale brown (10YR 6/3), strongly cemented duripan, dark brown (10YR 4/3) moist; massive; very hard, very firm; disseminated lime; violently effervescent; strongly alkaline (pH 8.8).

### Typical Pedon Location

*Soil name and map unit in which located:* Filiran silt loam, 2 to 4 percent slopes, in Filiran-Pineval-Kingingham association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 25 miles north of Austin; about 2,000 feet north and 150 feet west of the southeast corner of sec. 16, T. 23 N., R. 44 E.

### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in mid-June through October

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to the duripan:* 20 to 40 inches

*Depth to carbonates:* 12 to 25 inches

#### Control section:

Content of clay—35 to 50 percent

Content of rock fragments—5 to 20 percent when mixed, mainly pebbles

#### A horizon:

Value—3 or 4 moist

Chroma—2 or 3

#### E horizon:

Value—3 or 4 moist

Chroma—2 or 3

Structure—platy, subangular blocky, or prismatic

Other characteristics—15 to 60 percent of the faces of peds are bleached

#### B<sub>tn</sub> horizon:

Hue—10YR or 2.5Y

Value—4 to 6 dry, 3 to 5 moist

Chroma—3 or 4

Texture—clay, gravelly clay, silty clay, clay loam, or silty clay loam

Content of exchangeable sodium: 15 to 35 percent

Effervescence—noneffervescent or slightly effervescent in the upper part, strongly effervescent or violently effervescent in the lower part

Reaction—strongly alkaline or very strongly alkaline

### Fortank Series

*Depth class:* Moderately deep

*Drainage class:* Well drained

*Parent material:* Residuum derived from rhyolitic tuff

*Positions on landscape:* Side slopes of mountains

*Slope:* 4 to 8 percent

*Mean annual precipitation:* About 9 inches

*Mean annual temperature:* About 44 degrees F

**Taxonomic class:** Fine, montmorillonitic, frigid Xerollic Haplargids

### Typical Pedon

About 40 percent of the surface is covered with pebbles, 15 percent with cobbles, and 10 percent with stones.

- A1—0 to 3 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 3/3) moist; moderate medium platy structure; soft, very friable, slightly sticky and slightly plastic; common fine and few very fine roots; common fine and few medium tubular pores and few fine vesicular pores; 20 percent pebbles; mildly alkaline (pH 7.6); abrupt smooth boundary.
- A2—3 to 6 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; few very fine and fine tubular pores; 25 percent pebbles; mildly alkaline (pH 7.6); clear smooth boundary.
- Bt1—6 to 11 inches; brown (10YR 5/3) gravelly clay loam, brown (10YR 4/3) moist; moderate medium angular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; 20 percent pebbles and 10 percent cobbles; common thin and few moderately thick clay films on faces of peds and lining pores; moderately alkaline (pH 7.9); clear smooth boundary.
- Bt2—11 to 19 inches; brown (10YR 5/3) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; hard, friable, very sticky and very plastic; few very fine, fine, and medium roots; common very fine and fine and few medium tubular pores; 20 percent pebbles and 10 percent cobbles; many moderately thick clay films on faces of peds and lining pores; moderately alkaline (pH 7.9); clear smooth boundary.
- Btk—19 to 30 inches; light brown (7.5YR 6/4) gravelly clay, brown (7.5YR 4/4) moist; moderate medium angular blocky structure; hard, friable, very sticky and very plastic; few fine and medium roots; common medium and few very fine and fine tubular pores; 30 percent pebbles; many moderately thick clay films on faces of peds and lining pores; few fine filaments and threads of lime; slightly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.
- Cr—30 inches; weathered, rhyolitic tuff.

### Typical Pedon Location

*Map unit in which located:* Fortank gravelly loam, 4 to 8 percent slopes

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 18 miles east of Austin; about 900 feet south and 1,600 feet west of the northeast corner of sec. 29, T. 21 N., R. 48 E.

### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in mid-June through October

*Average annual soil temperature:* 45 to 47 degrees F

*Thickness of the solum and depth to bedrock:* 30 to 40 inches

#### Control section:

Texture—gravelly clay loam or gravelly clay

Content of clay—35 to 45 percent

Content of rock fragments—15 to 35 percent, dominantly pebbles

#### A horizon:

Value—3 or 4 moist

Structure—weak or moderate, very thin to thick, and platy; or weak or moderate, very fine to coarse, and subangular blocky

Reaction—mildly alkaline or moderately alkaline

#### Bt horizon:

Hue—7.5YR or 10YR

Value—5 or 6 dry, 4 or 5 moist

Chroma—3 or 4

Structure—weak or moderate and angular blocky or prismatic

### Gando Series

*Depth class:* Shallow

*Drainage class:* Well drained

*Parent material:* Residuum derived from mixed sedimentary rock

*Positions on landscape:* Crests and side slopes of mountains

*Slope:* 15 to 75 percent

*Mean annual precipitation:* About 16 inches

*Mean annual temperature:* About 42 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, frigid Lithic Haploxerolls

### Typical Pedon

About 20 percent of the surface is covered with pebbles and 10 percent with cobbles.

A1—0 to 4 inches; grayish brown (10YR 5/2) very

gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate very fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; few very fine tubular pores; 35 percent pebbles and 5 percent cobbles; mildly alkaline (pH 7.4); clear smooth boundary.

A2—4 to 8 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate very fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; few very fine tubular pores; 40 percent pebbles and 10 percent cobbles; mildly alkaline (pH 7.4); clear wavy boundary.

Bk—8 to 10 inches; brown (10YR 5/3) extremely gravelly loam, dark brown (10YR 3/3) moist; moderate very fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; few very fine tubular pores; 60 percent pebbles and 10 percent cobbles; common thin strongly effervescent lime coatings on the underside of coarse fragments; slightly effervescent in matrix; mildly alkaline (pH 7.4); abrupt wavy boundary.

R—10 inches; hard shale.

#### Typical Pedon Location

*Soil name and map unit in which located:* Gando stony loam, 15 to 30 percent slopes, in Loncan-Gando-Glean association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 22 miles northeast of Austin; about 1,000 feet south and 2,200 feet east of the northwest corner of sec. 5, T. 22 N., R. 48 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter to early in summer, dry early in July to mid-October

*Average annual soil temperature:* 43 to 46 degrees F

*Thickness of the mollic epipedon:* 7 to 14 inches

*Depth to bedrock:* 10 to 20 inches

*Depth to carbonates:* 7 to 14 inches

#### Control section:

Content of clay—10 to 18 percent

Content of rock fragments—50 to 70 percent, mainly pebbles

Reaction—mildly alkaline or moderately alkaline, commonly increasing in alkalinity with increasing depth

#### A horizon:

Value—4 or 5 dry, 3 or 4 moist

Chroma—2 or 3

Structure—moderate, very fine to medium, and granular; weak or moderate, very thin to medium, and platy; or weak, very fine, and

angular blocky to moderate, medium, and subangular blocky

Consistence—soft or slightly hard (dry), slightly sticky or sticky and nonplastic or plastic (moist)

#### Bk horizon:

Value—5 or 6 dry, 3 to 5 moist

Chroma—3 or 4

Structure—subangular blocky, granular, or massive

Consistence—soft or slightly hard (dry), slightly sticky or sticky and slightly plastic or plastic (moist)

Texture—extremely gravelly loam, extremely gravelly sandy loam, or very gravelly loam

Content of rock fragments—50 to 70 percent, mainly pebbles but as much as 20 percent cobbles

Effervescence—slightly effervescent or strongly effervescent

### Genaw Series

*Depth class:* Shallow

*Drainage class:* Well drained

*Parent material:* Mantle of loess over residuum derived from tuffaceous sediment

*Positions on landscape:* Rolling hills, rock pediments

*Slope:* 4 to 30 percent

*Mean annual precipitation:* About 9 inches

*Mean annual temperature:* About 46 degrees F

**Taxonomic class:** Loamy, mixed, mesic, shallow Xerollic Haplargids

#### Typical Pedon

About 5 percent of the surface is covered with pebbles and 5 percent with cobbles.

A1—0 to 3 inches; pale brown (10YR 6/3) very fine sandy loam, dark brown (10YR 4/3) moist; weak thick platy structure; slightly hard, very friable, slightly sticky and nonplastic; few very fine and fine roots; many very fine and fine vesicular pores; moderately alkaline (pH 8.0); abrupt smooth boundary.

A2—3 to 6 inches; brown (10YR 5/3) gravelly very fine sandy loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine, fine, and medium roots; common fine and medium tubular and interstitial pores; 15 percent pebbles; moderately alkaline (pH 8.2); clear smooth boundary.

Btk—6 to 11 inches; yellowish brown (10YR 5/4) gravelly clay loam, dark yellowish brown (10YR 4/4)

moist; moderate medium angular blocky structure; slightly hard, very friable, sticky and plastic; common very fine, fine, and medium roots; few very fine tubular pores; common fine and medium clay films on faces of peds and lining pores; 20 percent pebbles; slightly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Bkq—11 to 16 inches; very pale brown (10YR 7/3) very gravelly loam, yellowish brown (10YR 5/4) moist; massive; hard, friable, slightly sticky and slightly plastic; common fine and medium roots; few very fine tubular pores; 35 percent pebbles; common fine and medium lime filaments; 10 percent weak durinodes; violently effervescent; strongly alkaline (pH 8.6); clear wavy boundary.

Cr—16 inches; soft, tuffaceous sediment.

#### Typical Pedon Location

*Soil name and map unit in which located:* Genaw very fine sandy loam, 4 to 15 percent slopes, in Genaw-Perlor-Puett association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 26 miles southwest of Battle Mountain; about 800 feet north and 2,400 feet west of the southeast corner of sec. 6, T. 27 N., R. 42 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in June through November

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to paralithic contact:* 14 to 20 inches

#### A horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3

#### Bt horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4

Texture—loam or clay loam

Content of rock fragments—15 to 35 percent, mainly pebbles

Content of clay—18 to 30 percent

#### Bkq horizon:

Value—6 or 7 dry, 4 or 5 moist

Chroma—3 or 4

Texture—sandy loam or loam

Content of rock fragments—25 to 50 percent, mainly pebbles

Reaction—moderately alkaline or strongly alkaline

Other characteristics—5 to 15 percent

discontinuous weak cementation or weakly cemented durinodes

### Glean Series

*Depth class:* Deep

*Drainage class:* Well drained

*Parent material:* Colluvium and residuum derived from various kinds of rock

*Positions on landscape:* Side slopes of mountains

*Slope:* 15 to 75 percent

*Mean annual precipitation:* About 14 inches

*Mean annual temperature:* About 45 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, frigid Pachic Haploxerolls

#### Typical Pedon

About 20 percent of the surface is covered with pebbles and 1 percent with stones.

A1—0 to 6 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; moderate medium platy structure parting to moderate medium subangular blocky; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine tubular pores; 30 percent pebbles; neutral (pH 7.0); abrupt smooth boundary.

A2—6 to 19 inches; very dark grayish brown (10YR 3/2) very gravelly loam, very dark brown (10YR 2/2) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine and medium roots; common very fine tubular pores; 35 percent pebbles; neutral (pH 7.0); clear wavy boundary.

AC—19 to 31 inches; dark brown (10YR 4/3) very gravelly loam, very dark brown (10YR 2/2) moist; weak coarse subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine and medium roots; common very fine tubular pores; 35 percent pebbles and 10 percent cobbles; neutral (pH 7.2); clear wavy boundary.

C—31 to 49 inches; yellowish brown (10YR 5/4) very gravelly loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; common fine and medium roots; few very fine tubular pores; 35 percent pebbles and 10 percent cobbles; neutral (pH 7.2); abrupt smooth boundary.

2R—49 inches; hard, altered andesite.

#### Typical Pedon Location

*Soil name and map unit in which located:* Glean gravelly loam, 30 to 50 percent slopes, in Glean-Walti-Cleavage association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 24 miles south of Battle



Mountain; about 1,500 feet south and 500 feet east of the northwest corner of sec. 29, T. 28 N., R. 45 E.

### Range in Characteristics

*Soil moisture content:* Usually dry, but moist in November to mid-July

*Average annual soil temperature:* 43 to 47 degrees F

*Thickness of the mollic epipedon:* 22 to 34 inches

*Depth to bedrock:* 40 to 60 inches

#### Control section:

Texture—very gravelly or very cobbly sandy loam or loam

Content of rock fragments—40 to 70 percent, mainly pebbles and cobbles

Reaction—slightly acid or neutral

#### A horizon:

Value—4 or 5 dry

Chroma—2 or 3

#### C horizon:

Hue—7.5YR, 10YR, or 2.5Y

Value—5 or 6 dry, 4 or 5 moist

Chroma—2 to 4

## Glyphs Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Mixed alluvium that is derived mainly from volcanic rock and includes some loess and volcanic ash

*Positions on landscape:* Fan piedmont remnants

*Slope:* 0 to 30 percent

*Mean annual precipitation:* About 10 inches

*Mean annual temperature:* About 45 degrees F

**Taxonomic class:** Fine-loamy, mixed, mesic Durixerollic Haplargids

### Typical Pedon

About 40 percent of the surface is covered with pebbles.

A1—0 to 4 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; moderate thick platy structure; slightly hard, friable, nonsticky and slightly plastic; few fine roots; many fine and medium vesicular pores; 5 percent pebbles; mildly alkaline (pH 7.8); abrupt smooth boundary.

A2—4 to 7 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common fine roots and few very fine and medium roots; common fine and medium vesicular

and interstitial pores; 10 percent pebbles; mildly alkaline (pH 7.8); abrupt smooth boundary.

Bt—7 to 12 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; slightly hard, friable, slightly sticky and plastic; common fine roots and few very fine and medium roots; few fine interstitial pores; many moderately thick clay films on peds and in pores; 20 percent pebbles; moderately alkaline (pH 8.0); clear wavy boundary.

Btk—12 to 17 inches; light yellowish brown (10YR 6/4) gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; few medium tubular pores; common thin clay films on peds; lime coatings on the underside of rock fragments; 20 percent pebbles; moderately alkaline (pH 7.9); gradual wavy boundary.

Bqk1—17 to 37 inches; pale brown (10YR 6/3) gravelly sandy loam, brown (10YR 4/3) moist; massive; hard, firm, nonsticky and nonplastic; few very fine and fine roots; common fine filaments of lime; 30 percent pebbles; continuous weak silica cementation; violently effervescent; strongly alkaline (pH 8.6); gradual wavy boundary.

2Bqk2—37 to 60 inches; pale brown (10YR 6/3) very gravelly coarse sand, brown (10YR 4/3) moist; single grain; hard, firm, nonsticky and nonplastic; few very fine and fine roots; lime coatings on the underside of rock fragments; 40 percent pebbles; continuous weak silica cementation; moderately alkaline (pH 8.0).

### Typical Pedon Location

*Soil name and map unit in which located:* Glyphs fine sandy loam, 2 to 8 percent slopes, in Glyphs-Muni-Orovada association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 18 miles east of Austin, in the Monitor Valley; about 500 feet north and 1,580 feet east of the southeast corner of sec. 17, T. 19 N., R. 47 E.

### Range in Characteristics

*Soil moisture content:* Moist in some part from October to mid-June, dry in summer and early in fall

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to the Bqk horizon:* 12 to 20 inches

*Other characteristics:* Base of continuous, weak, silica cementation at a depth of 36 to more than 60 inches

*Control section:*

Content of clay—20 to 35 percent  
 Content of rock fragments—15 to 30 percent  
 pebbles, 0 to 5 percent cobbles  
 Reaction—mildly alkaline to strongly alkaline

*A horizon:*

Value—5 or 6 dry, 3 or 4 moist  
 Chroma—2 or 3

*Bt horizon:*

Value—5 or 6 dry, 4 or 5 moist  
 Chroma—2 to 4  
 Content of rock fragments—10 to 30 percent  
 pebbles, 0 to 5 percent cobbles

*Btk horizon:*

Effervescence—noneffervescent or slightly  
 effervescent in matrix  
 Other characteristics—few to many lime filaments or  
 lime coatings on the underside of rock  
 fragments

*Bqk horizon:*

Content of rock fragments—15 to 45 percent  
 pebbles, 0 to 5 percent cobbles  
 Other characteristics—common, continuous, weak  
 cementation; thin strata that are 30 to 60  
 percent durinodes in a friable matrix in some  
 pedons

**Granzan Series**

*Depth class:* Deep

*Drainage class:* Well drained

*Parent material:* Residuum and colluvium derived from  
 limestone and calcareous shale

*Positions on landscape:* Side slopes of mountains

*Slope:* 30 to 50 percent

*Mean annual precipitation:* About 16 inches

*Mean annual temperature:* About 43 degrees F

**Taxonomic class:** Loamy-skeletal, carbonatic, frigid  
 Typic Calcixerolls

**Typical Pedon**

About 35 percent of the surface is covered with pebbles  
 and 35 percent with cobbles.

A1—0 to 4 inches; brown (10YR 5/3) very cobbly loam,  
 dark brown (10YR 3/3) moist; weak medium and  
 fine granular structure; soft, very friable, slightly  
 sticky and slightly plastic; common very fine and  
 fine roots; common very fine interstitial pores; 25  
 percent pebbles and 20 percent cobbles; strongly  
 effervescent; mildly alkaline (pH 7.6); clear smooth  
 boundary.

A2—4 to 12 inches; brown (10YR 5/3) very gravelly

loam, dark brown (10YR 3/3) moist; weak medium  
 subangular blocky structure; slightly hard, friable,  
 slightly sticky and slightly plastic; common very fine,  
 fine, and medium roots; common very fine  
 interstitial pores; 45 percent pebbles and 5 percent  
 cobbles; common thin lime coatings on the  
 underside of rock fragments; strongly effervescent;  
 mildly alkaline (pH 7.8); clear wavy boundary.

Bk1—12 to 29 inches; pale brown (10YR 6/3) very  
 gravelly loam, dark brown (10YR 4/3) moist;  
 massive; slightly hard, friable, nonsticky and  
 nonplastic; common very fine, fine, and medium  
 roots; common very fine tubular pores; 50 percent  
 pebbles and 5 percent cobbles; common thin to  
 thick lime coatings and pendants on rock fragments;  
 violently effervescent; moderately alkaline (pH 8.0);  
 gradual wavy boundary.

Bk2—29 to 43 inches; light yellowish brown (10YR 6/4)  
 extremely gravelly loam, dark yellowish brown  
 (10YR 4/4) moist; massive; soft, very friable,  
 nonsticky and nonplastic; common very fine, fine,  
 and medium roots; few very fine tubular pores; 55  
 percent pebbles and 10 percent cobbles; common  
 thick lime coatings and pendants on rock fragments;  
 violently effervescent; moderately alkaline (pH 8.2);  
 abrupt wavy boundary.

2R—43 inches; highly fractured limestone.

**Typical Pedon Location**

*Soil name and map unit in which located:* Granzan very  
 cobbly loam, 30 to 50 percent slopes, in Halacan-  
 Hapgood-Granzan association

*Location in Nevada:* Lander County, Nevada, South  
 Part, survey area; about 15 miles north of Austin;  
 about 900 feet west and 2,000 feet north of the  
 southeast corner of sec. 36, T. 21 N., R. 44 E.

**Range in Characteristics**

*Soil moisture content:* Usually moist, but dry in mid-July  
 to September

*Average annual soil temperature:* 43 to 47 degrees F

*Thickness of the mollic epipedon:* 11 to 19 inches

*Depth to bedrock:* 40 to 60 inches

*Control section:*

Content of clay—18 to 27 percent

Content of rock fragments—35 to 60 percent when  
 mixed, dominantly pebbles but as much as 15  
 percent cobbles

Reaction—mildly alkaline or moderately alkaline  
 Calcium carbonate equivalent—40 to 50 percent

*A horizon:*

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3

Structure—weak or moderate, fine or medium, and granular or subangular blocky  
 Effervescence—slightly effervescent to violently effervescent

**Bk horizon:**

Value—6 or 7 dry, 3 or 4 moist  
 Chroma—3 or 4  
 Texture—dominantly very gravelly loam or very gravelly silt loam, but extremely gravelly loam in the lower part in some pedons  
 Effervescence—strongly effervescent or violently effervescent

## Grassval Series

**Depth class:** Very shallow or shallow to duripan

**Drainage class:** Well drained

**Parent material:** Alluvium derived from various kinds of rock

**Positions on landscape:** Fan piedmont remnants

**Slope:** 2 to 15 percent

**Mean annual precipitation:** About 9 inches

**Mean annual temperature:** About 46 degrees F

**Taxonomic class:** Loamy, mixed, mesic, shallow Xerollic Durargids

### Typical Pedon

About 10 percent of the surface is covered with pebbles.

**A**—0 to 4 inches; light brownish gray (10YR 6/2) fine sandy loam, brown (10YR 4/3) moist; weak thin platy structure; slightly hard, very friable, nonsticky and slightly plastic; few fine and very fine roots; few medium and many fine vesicular pores; 10 percent pebbles; slightly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

**Bt**—4 to 10 inches; pale brown (10YR 6/3) gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; few medium and coarse roots and common fine roots; common fine and very fine tubular pores; common thin clay films on peds; 20 percent pebbles and 5 percent cobbles; violently effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

**Btk**—10 to 13 inches; light yellowish brown (10YR 6/4) gravelly clay loam, yellowish brown (10YR 5/4) moist; moderate medium and coarse subangular blocky structure; hard, friable, sticky and plastic; common fine roots; common fine tubular pores; common thin clay films on faces of peds; 20 percent pebbles and 5 percent cobbles; lime coatings on the

underside of pebbles and many fine and medium soft lime masses; violently effervescent; strongly alkaline (pH 8.8); abrupt smooth boundary.

**Bqkm**—13 to 60 inches; white (10YR 8/1), indurated duripan and thin horizontal lenses that are weakly or strongly cemented; violently effervescent.

### Typical Pedon Location

**Soil name and map unit in which located:** Grassval fine sandy loam, 8 to 15 percent slopes, in Grassval-Oxcocel association

**Location in Nevada:** Lander County, Nevada, South Part, survey area; about 10 miles east of Austin, in the northern part of the Big Smoky Valley; about 1,950 feet north and 1,900 feet west of the southeast corner of sec. 25, T. 19 N., R. 45 E.

### Range in Characteristics

**Soil moisture content:** Moist in winter and spring, dry early in June through October

**Average annual soil temperature:** 47 to 50 degrees F

**Thickness of the solum and depth to the duripan:** 8 to 14 inches

**Other characteristics:** Calcareous throughout; effervescence increasing with increasing depth; segregated lime common in the lower part of the solum

### Control section:

Content of clay—18 to 27 percent

Content of rock fragments—15 to 35 percent, mainly pebbles

### A horizon:

Value—3 or 4 moist

Chroma—2 or 3

Reaction—mildly alkaline or moderately alkaline

### Bt horizon:

Value—4 or 5 moist

Chroma—3 or 4

Texture—gravelly loam or gravelly clay loam

Content of clay—25 to 35 percent

Structure—prismatic or subangular blocky

Reaction—moderately alkaline or strongly alkaline

## Grina Series

**Depth class:** Shallow

**Drainage class:** Well drained

**Parent material:** Residuum derived from soft sedimentary rock

**Positions on landscape:** Low, rolling hills

**Slope:** 15 to 50 percent

**Mean annual precipitation:** About 10 inches

**Mean annual temperature:** About 48 degrees F

**Taxonomic class:** Loamy, mixed (calcareous), mesic, shallow Xeric Torriorthents

### Typical Pedon

About 40 percent of the surface is covered with pebbles.

A1—0 to 3 inches; light brownish gray (10YR 6/2) gravelly loam, dark grayish brown (10YR 4/2) moist; moderate thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common fine vesicular and tubular pores; 20 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

A2—3 to 5 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; moderate fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and medium roots; few fine tubular pores and many fine interstitial pores; 10 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

A3—5 to 11 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; 10 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); abrupt wavy boundary.

C—11 to 15 inches; very pale brown (10YR 7/3) loam, brown (10YR 5/3) moist; massive; soft, friable, slightly sticky and slightly plastic; common fine interstitial pores; 10 percent pebbles; violently effervescent; moderately alkaline (pH 8.4); clear irregular boundary.

Cr—15 inches; soft, tuffaceous sediment; fractures 5 to 10 inches apart.

### Typical Pedon Location

*Soil name and map unit in which located:* Grina gravelly loam, 15 to 30 percent slopes, in Grina-Grina, eroded-Caniwe association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 1,400 feet north and 1,300 feet east of the southwest corner of sec. 8, T. 25 N., R. 46 E.

### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in mid-June through October

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to paralithic contact:* 14 to 20 inches

*Calcium carbonate equivalent:* 20 to 40 percent of the fraction less than 20 millimeters

*Other characteristics:* Thin Bk horizon above the paralithic contact in some pedons

### Control section:

Texture—loam, silt loam, or silty clay loam

Content of clay—20 to 35 percent when mixed

Content of rock fragments—0 to 15 percent when mixed

### A horizon:

Hue—10YR or 2.5Y

Value—5 or 6 dry, 3 or 4 moist

Structure—very fine or fine and granular, very thin to very thick and platy, or very fine to very coarse and subangular blocky

Consistence—soft to hard (dry), very friable or friable (moist), slightly sticky or sticky and slightly plastic or plastic (wet)

### C horizon:

Hue—10YR or 2.5Y

Value—6 to 8 dry, 5 to 7 moist

Chroma—2 to 4

Structure—weak or moderate, very fine to medium and subangular blocky, very fine or fine and angular blocky, or very thin to thick and platy; or massive

Effervescence—strongly effervescent or violently effervescent

### Cr horizon:

Hue—10YR to 5Y

Value—7 or 8 dry, 5 to 7 moist

Chroma—2 or 3

Consistence—hard to extremely hard (dry), firm to very firm (moist)

Other characteristics—precipitated lime or gypsum in filaments or threads and iron-manganese stains common along fracture planes

## Gund Series

*Depth class:* Very deep

*Drainage class:* Somewhat poorly drained

*Parent material:* Silty alluvium derived mainly from loess, volcanic ash, and various kinds of rock over lacustrine sediment

*Positions on landscape:* Lake plains, lake plain remnants, alluvial flat remnants

*Slope:* 0 to 2 percent

*Mean annual precipitation:* About 8 inches

*Mean annual temperature:* About 47 degrees F

**Taxonomic class:** Fine-silty over clayey, mixed, nonacid, mesic Aquic Durorthidic Torriorthents

### Typical Pedon

A—0 to 4 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; moderate thin and medium

platy structure; soft, very friable, sticky and slightly plastic; common very fine and fine roots; many very fine interstitial and vesicular pores; strongly alkaline (pH 8.7); gradual smooth boundary.

**Cq1**—4 to 14 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate thin and medium platy structure; hard, friable, sticky and plastic; common very fine and fine roots; common very fine tubular pores; 40 percent discontinuous weak silica cementation; strongly alkaline (pH 9.0); gradual smooth boundary.

**Cq2**—14 to 23 inches; very pale brown (10YR 7/3) silt loam, pale brown (10YR 6/3) moist; moderate thin and medium platy structure; hard, firm, slightly sticky and nonplastic; brittle; few very fine, fine, medium, and coarse roots; common very fine tubular pores; continuous weak silica cementation; strongly effervescent; moderately alkaline (pH 8.0); clear wavy boundary.

**2C**—23 to 38 inches; light gray (2.5Y 7/2) clay, light brownish gray (2.5Y 6/2) moist; common medium distinct mottles that are olive yellow (2.5Y 6/6) moist; strong medium prismatic structure; hard, friable, sticky and very plastic; few very fine, fine, and medium roots; many very fine and fine interstitial and tubular pores; continuous moderately thick pressure faces; 60 percent of faces of peds, pores, and root channels coated with reddish brown (5YR 4/4) iron and manganese stains; strongly effervescent; strongly alkaline (pH 8.9); clear wavy boundary.

**2Cy**—38 to 60 inches; pale yellow (5Y 7/3) silty clay, light olive gray (5Y 6/2) moist; many medium distinct mottles that are olive yellow (2.5Y 6/6) moist; massive; hard, friable, very sticky and plastic; few very fine roots; many very fine tubular pores; common fine white (10YR 8/1) gypsum crystals; strongly effervescent; strongly alkaline (pH 9.0).

#### Typical Pedon Location

*Soil name and map unit in which located:* Gund silt loam in Gund-Umberland association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 55 miles southeast of Battle Mountain; about 1,600 feet north and 1,260 feet west of the southeast corner of sec. 19, T. 23 N., R. 48 E.

#### Range in Characteristics

*Soil moisture content:* Usually moist in some part of the moisture control section in October through July; usually dry in August and September

*Depth to an apparent seasonal high water table:* 36 to 42 inches late in winter to early in summer

*Average annual soil temperature:* 47 to 52 degrees F  
*Depth to weak silica cementation:* 3 to 6 inches  
*Depth to unconformable lacustrine sediment:* 15 to 30 inches

*Reaction:* Moderately alkaline or strongly alkaline

*Other characteristics:* Thin A2 horizon or 2Cg horizon in some pedons

#### Control section:

Texture—silt loam in the upper part, silty clay or clay in the lower part

Content of clay—averages 18 to 25 percent in the upper part and 45 to 60 percent in the lower part

#### A horizon:

Value—6 or 7 dry, 3 to 5 moist

Chroma—2 or 3

Effervescence—commonly noneffervescent, but slightly effervescent in some pedons

Other characteristics—strongly affected by salt and sodium, decreasing in degree with increasing depth

#### Cq horizon:

Value—6 or 7 dry, 4 to 6 moist

Chroma—3 or 4

Effervescence—commonly noneffervescent, but ranges to strongly effervescent

Other characteristics—30 to 60 percent discontinuous, weak, silica cementation in the upper part; continuous, weak, silica cementation in the lower part

#### 2C horizon:

Hue—2.5Y or 10YR in the upper part, 2.5Y or 5Y in the lower part

Value—7 or 8 dry in the upper part and 6 or 7 dry in the lower part, 5 or 6 moist

Chroma—2 or 3

Content of gypsum crystals—few to many in the lower part

Other characteristics—iron and manganese stains coating 50 to 60 percent of peds, pores, and root channels; common or many, distinct or prominent mottles

### Hackwood Series

*Depth class:* Very deep

*Drainage class:* Moderately well drained

*Parent material:* Alluvium and colluvium that are derived from volcanic rock and include some loess

*Positions on landscape:* Concave side slopes of mountains

*Slope:* 15 to 30 percent

*Mean annual precipitation:* About 18 inches  
*Mean annual temperature:* About 41 degrees F

**Taxonomic class:** Fine-loamy, mixed Pachic Cryoborolls

### Typical Pedon

About 5 percent of the surface is covered with stones and 20 percent with boulders.

O—1 inch to 0; aspen litter.

A1—0 to 6 inches; dark gray (10YR 4/1) gravelly loam, black (10YR 2/1) moist; moderate very fine granular structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine roots; common very fine and fine interstitial pores; 10 percent pebbles and 5 percent cobbles; slightly acid (pH 6.4); clear wavy boundary.

A2—6 to 18 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; common medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common fine, medium, and coarse roots; common fine and medium interstitial and tubular pores; 15 percent pebbles and 5 percent cobbles; slightly acid (pH 6.2); gradual irregular boundary.

A3—18 to 32 inches; grayish brown (10YR 5/2) gravelly loam, very dark brown (10YR 2/2) moist; common coarse subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common fine, medium, and coarse roots; common fine tubular pores; 20 percent pebbles and 5 percent stones; slightly acid (pH 6.2); gradual wavy boundary.

2C—32 to 60 inches; pale brown (10YR 6/3) very gravelly clay loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores; few very thin silt coatings in pores; 30 percent pebbles, 5 percent cobbles, and 5 percent stones; slightly acid (pH 6.2).

### Typical Pedon Location

*Soil name and map unit in which located:* Hackwood gravelly loam, 15 to 30 percent slopes, rubbly, in Hackwood-Newlands-Hapgood association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 15 miles northeast of Austin; about 1,650 feet east and 3,150 feet south of the northwest corner of sec. 26, T. 20 N., R. 46 E.

### Range in Characteristics

*Soil moisture content:* Moist late in fall to summer; dry in September and October

*Average annual soil temperature:* 38 to 44 degrees F

*Average summer soil temperature:* 43 to 47 degrees F

*Thickness of the mollic epipedon:* 16 to 35 inches

*Depth to the 2C horizon:* 30 to 49 inches

*Other characteristics:* Moisture in the lower part of the control section or the lower part of the profile supplied by the lateral movement of water

### Control section:

Texture—dominantly silt loam, gravelly silt loam, or gravelly loam, but commonly very gravelly loam to very gravelly silty clay loam in the lower part

Content of clay—averages 18 to 30 percent

Content of rock fragments—averages 15 to 35 percent, mainly pebbles

Reaction—neutral or slightly acid, decreasing in acidity with increasing depth

### A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry, 1 or 2 moist

Structure—platy, granular, or subangular blocky

### C horizon:

Hue—2.5Y or 10YR

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3

Other characteristics (lower part of horizon)—pores lined with very thin silt coatings or uncoated sand grains; few fine distinct (10YR 5/6 dry, 10YR 4/4 moist) mottles in some pedons; few manganese stains coating pebbles and lining pores in some pedons

## Halacan Series

*Depth class:* Shallow

*Drainage class:* Well drained

*Parent material:* Residuum derived from limestone

*Positions on landscape:* Side slopes and crests of mountains

*Slope:* 8 to 50 percent

*Mean annual precipitation:* About 16 inches

*Mean annual temperature:* About 38 degrees F

**Taxonomic class:** Loamy-skeletal, carbonatic Cryic Lithic Rendolls

### Typical Pedon

About 50 percent of the surface is covered with pebbles.

A1—0 to 5 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; many very fine and fine interstitial pores; thick lime coatings and

pendants on the underside of rock fragments; 40 percent pebbles; slightly effervescent; moderately alkaline (pH 8.0); clear wavy boundary.

A2—5 to 11 inches; brown (10YR 5/3) extremely channery loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine and medium roots; common fine tubular pores; thick lime coatings and pendants on the underside of rock fragments; 45 percent channers and 15 percent flagstones; slightly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Bk—11 to 17 inches; brown (10YR 5/3) extremely channery loam, brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common fine tubular and interstitial pores; thick continuous lime coatings and pendants on the underside of rock fragments; 45 percent channers and 30 percent flagstones; violently effervescent; moderately alkaline (pH 8.2); gradual wavy boundary.

R—17 inches; hard, fractured limestone.

#### Typical Pedon Location

*Soil name and map unit in which located:* Halacan very gravelly loam, 30 to 50 percent slopes, in Halacan-Hatur-Rock outcrop association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 17 miles north of Austin, on Mount Callaghan; about 1,400 feet north and 2,300 feet west of the southeast corner of sec. 1, T. 21 N., R. 44 E.

#### Range in Characteristics

*Soil moisture content:* Dry late in summer and early in fall, moist in winter and spring and early in summer

*Average annual soil temperature:* 37 to 42 degrees F

*Mean summer soil temperature:* 50 to 59 degrees F

*Depth to bedrock:* 10 to 20 inches

*Thickness of the mollic epipedon:* 7 to 11 inches

*Calcium carbonate equivalent:* 40 to 60 percent

*Control section:*

Content of clay—10 to 18 percent

Content of rock fragments—50 to 80 percent, mainly channers

*A horizon:*

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3

*Bk horizon:*

Value—5 to 7 dry, 4 or 5 moist

Chroma—2 or 3

Reaction—moderately alkaline or strongly alkaline

### Handy Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Alluvium derived dominantly from igneous rock and some limestone and dolostone

*Positions on landscape:* Fan piedmonts

*Slope:* 4 to 30 percent

*Mean annual precipitation:* About 11 inches

*Mean annual temperature:* About 44 degrees F

**Taxonomic class:** Fine, montmorillonitic, frigid Xerollic Haplargids

#### Typical Pedon

About 20 percent of the surface is covered with pebbles.

A1—0 to 3 inches; light brownish gray (10YR 6/2) loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; common fine vesicular pores; 10 percent pebbles; mildly alkaline (pH 7.4); clear smooth boundary.

A2—3 to 6 inches; light brownish gray (10YR 6/2) fine sandy loam, dark brown (10YR 3/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; few fine tubular pores; 10 percent pebbles; mildly alkaline (pH 7.4); clear smooth boundary.

BA—6 to 9 inches; light brownish gray (10YR 6/2) loam, dark brown (10YR 4/3) moist; moderate medium and fine subangular blocky structure; slightly hard, friable, sticky and slightly plastic; common very fine and fine roots; common fine tubular pores; 5 percent pebbles; mildly alkaline (pH 7.6); clear smooth boundary.

Bt—9 to 17 inches; brown (10YR 5/3) clay, dark yellowish brown (10YR 4/4) moist; strong medium prismatic structure; extremely hard, very firm, very sticky and very plastic; few fine roots; few fine tubular pores; many thick clay films on peds; 10 percent pebbles; moderately alkaline (pH 8.0); clear smooth boundary.

Btk1—17 to 23 inches; brown (10YR 5/3) clay, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure; very hard, very firm, very sticky and very plastic; few fine roots; few fine tubular pores; many thick clay films on peds; 10

percent pebbles; few seams of lime; slightly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

**Btk2**—23 to 38 inches; light yellowish brown (10YR 6/4) gravelly clay, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; very hard, very firm, very sticky and very plastic; few very fine roots; few fine tubular pores; few moderately thick clay films on peds; 20 percent pebbles; many seams of lime; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

**Bk**—38 to 60 inches; very pale brown (10YR 7/3) gravelly loam, dark yellowish brown (10YR 4/4) moist; massive; hard, firm, sticky and plastic; few very fine roots; very few fine tubular pores; common very fine very dark gray (10YR 3/1) manganese stains; 25 percent pebbles; common seams of lime; strongly effervescent; moderately alkaline (pH 8.2).

#### Typical Pedon Location

*Soil name and map unit in which located:* Handy loam, 4 to 8 percent slopes, in Handy-Caniwe-Zoesta association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 40 miles south of Battle Mountain; about 350 feet south and 2,000 feet west of the northeast corner of sec. 29, T. 25 N., R. 46 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in June through October

*Average annual soil temperature:* 45 to 47 degrees F

*Depth to lime accumulation:* 12 to 17 inches

*Depth to the Bk horizon:* 20 to 40 inches

#### Control section:

Content of clay—40 to 50 percent

Content of rock fragments—0 to 30 percent, mainly pebbles

#### A horizon:

Value—4 to 6 dry (value of more than 5.5 occurs when the upper 7 inches is mixed); 3 or 4 moist

Chroma—2 or 3

Structure—granular, or thin to thick and platy

Reaction—neutral or mildly alkaline

#### Bt and Btk horizons:

Hue—dominantly 10YR or 7.5YR, but 5YR in some pedons

Value—5 or 6 dry, 4 or 5 moist

Chroma—2 to 4

Texture—clay or gravelly clay

Structure—moderate or strong and angular blocky or prismatic

Reaction—neutral to moderately alkaline, commonly increasing in alkalinity with increasing depth

#### Bk horizon:

Texture—stratified gravelly loam to very gravelly loamy sand

Content of rock fragments—25 to 60 percent, mainly pebbles

Effervescence—strongly effervescent or violently effervescent

Reaction—moderately alkaline or strongly alkaline

### Hapgood Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Colluvium that is derived from volcanic rock and includes some volcanic ash

*Positions on landscape:* Side slopes of mountains

*Slope:* 2 to 75 percent

*Mean annual precipitation:* About 16 inches

*Mean annual temperature:* About 42 degrees F

**Taxonomic class:** Loamy-skeletal, mixed Pachic Cryoborolls

#### Typical Pedon

About 10 percent of the surface is covered with pebbles.

**A1**—0 to 7 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; moderate medium and fine subangular blocky structure; slightly hard, very friable, slightly sticky and plastic; many very fine and fine roots and few medium and coarse roots; many very fine interstitial pores; 20 percent pebbles; neutral (pH 6.8); diffuse wavy boundary.

**A2**—7 to 17 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate coarse subangular blocky structure parting to moderate fine granular; slightly hard, very friable, slightly sticky and plastic; many very fine and fine roots and few medium and coarse roots; many very fine interstitial pores; 15 percent pebbles and 5 percent cobbles; neutral (pH 6.8); gradual wavy boundary.

**A3**—17 to 33 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots and few medium and coarse roots; common very fine and fine interstitial pores; 30 percent pebbles and 15 percent cobbles; neutral (pH 6.8); gradual wavy boundary.



- AC—33 to 40 inches; yellowish brown (10YR 5/4) very gravelly loam, dark brown (10YR 4/3) moist; moderate coarse subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine and fine roots; few very fine and fine interstitial pores; 30 percent pebbles and 15 percent cobbles; neutral (pH 6.8); clear wavy boundary.
- C—40 to 60 inches; light yellowish brown (10YR 6/4) very cobbly loam, dark yellowish brown (10YR 3/4) moist; massive; soft, very friable, sticky and plastic; few fine interstitial pores; 15 percent pebbles, 30 percent cobbles, and 10 percent stones; neutral (pH 7.2).

#### Typical Pedon Location

*Soil name and map unit in which located:* Hapgood gravelly loam, 30 to 50 percent slopes, in Newlands-Packer-Hapgood association, moderately steep

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 19 miles north of Austin; about 1,300 feet west and 2,280 feet north of the southeast corner of sec. 15, T. 20 N., R. 46 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry late in July to early in October

*Mean annual soil temperature:* 38 to 47 degrees F

*Mean summer soil temperature:* 55 to 59 degrees F

*Thickness of the mollic epipedon:* 16 to 60 inches

*Depth to bedrock:* 40 to more than 80 inches

*Reaction:* Slightly acid or neutral

#### Control section:

Texture—dominantly loam, but includes strata of fine sandy loam, sandy loam, silt loam, or clay loam

Content of clay—18 to 27 percent

Content of rock fragments—35 to 50 percent, dominantly pebbles

#### A horizon:

Value—2 to 5 dry, 2 or 3 moist

Chroma—1 to 3 in most pedons (chroma of 1 common only in A1 horizon and chroma of 3 common only in or below A3 horizon)

Structure—platy, subangular blocky, granular, or massive

Base saturation—50 to 75 percent in the upper part

#### C horizon:

Hue—10YR or 7.5YR

Value—4 to 7 dry, 3 to 5 moist

Chroma—2 to 6

Other characteristics: C horizon absent in areas

where the mollic epipedon overlies bedrock at a depth of less than 48 inches

### Hatur Series

*Depth class:* Moderately deep

*Drainage class:* Well drained

*Parent material:* Residuum and colluvium derived from limestone and dolostone

*Positions on landscape:* Side slopes of mountains

*Slope:* 30 to 50 percent

*Mean annual precipitation:* About 16 inches

*Mean annual temperature:* About 42 degrees F

*Taxonomic class:* Loamy-skeletal, carbonatic Cryic Rendolls

#### Typical Pedon

About 90 percent of the surface is covered with pebbles.

A1—0 to 3 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine interstitial pores; 35 percent pebbles; strongly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

A2—3 to 14 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; common very fine and fine interstitial pores; 45 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); gradual wavy boundary.

Bw—14 to 22 inches; yellowish brown (10YR 5/4) extremely gravelly loam, dark yellowish brown (10YR 3/4) moist; weak very fine and fine subangular blocky structure; soft, very friable, sticky and slightly plastic; many very fine and fine roots and few medium roots; common very fine and fine interstitial pores and few fine tubular pores; 60 percent pebbles and 5 percent cobbles; violently effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

C—22 to 29 inches; pale brown (10YR 6/3) extremely gravelly loam, dark brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky and nonplastic; common very fine and fine roots; few very fine interstitial pores; 65 percent pebbles and 15 percent cobbles; violently effervescent;

moderately alkaline (pH 8.4); gradual wavy boundary.

R—29 inches; highly fractured limestone.

#### Typical Pedon Location

*Soil name and map unit in which located:* Hatur gravelly loam, 30 to 50 percent slopes, in Halacan-Hatur-Rock outcrop association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 15 miles north of Austin; about 900 feet north and 750 feet west of the southeast corner of sec. 36, T. 22 N., R. 44 E.

#### Range in Characteristics

*Soil moisture content:* Usually moist, but dry for 45 to 60 days late in summer and early in fall

*Average annual soil temperature:* 43 to 47 degrees F

*Average summer soil temperature:* 52 to 56 degrees F

*Thickness of the mollic epipedon:* 10 to 14 inches

*Depth to bedrock:* 20 to 40 inches

#### Control section:

Texture—extremely gravelly loam or extremely gravelly sandy loam

Content of clay—12 to 25 percent

Content of rock fragments—averages 60 to 80 percent, mostly pebbles

Calcium carbonate equivalent—60 to 80 percent

#### A horizon:

Value—4 or 5 dry

Chroma—2 or 3

#### Bw horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4

#### C horizon:

Value—4 or 5 moist

Chroma—2 or 3

### Hessing Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Loess and silty alluvium that include some volcanic ash over coarse alluvium derived mostly from tuff, basalt, rhyolite, and andesite

*Positions on landscape:* Fan skirts, inset fans

*Slope:* 0 to 2 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 49 degrees F

**Taxonomic class:** Coarse-loamy, mixed, mesic Typic Camborthids

#### Typical Pedon

A—0 to 4 inches; light brownish gray (2.5Y 6/2) silt

loam, dark grayish brown (2.5Y 4/2) moist; moderate thin and very thick platy structure; slightly hard, very friable, slightly sticky and plastic; few very fine, fine, and medium roots; many medium vesicular pores; moderately alkaline (pH 8.0); abrupt smooth boundary.

Bw—4 to 11 inches; light gray (10YR 7/2) silty clay loam, brown (10YR 5/3) moist; moderate coarse prismatic structure; hard, friable, sticky and very plastic; many very fine and few fine roots; many very fine interstitial and tubular pores; moderately alkaline (pH 8.4); abrupt smooth boundary.

Bqk—11 to 13 inches; very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; weak thick platy structure; hard, very friable and firm, sticky and plastic; few very fine roots; common very fine tubular pores; 50 percent weak discontinuous silica cementation; 10 percent weak, rounded durinodes 15 to 25 millimeters in diameter; strongly effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary.

C—13 to 18 inches; very pale brown (10YR 7/3) very fine sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; common very fine tubular pores; 5 percent fine pebbles; strongly alkaline (pH 9.0); abrupt wavy boundary.

2Ck1—18 to 26 inches; light gray (10YR 7/2) gravelly loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine tubular pores; 25 percent pebbles; common fine lime filaments and lime coatings on pebbles; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary.

2Ck2—26 to 30 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 3/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; 35 percent pebbles; few fine lime filaments; slightly effervescent; strongly alkaline (pH 8.6); abrupt wavy boundary.

3Ck3—30 to 60 inches; variegated extremely gravelly loamy coarse sand; single grain; loose, nonsticky and nonplastic; few very fine roots; 65 percent pebbles; many fine lime filaments; slightly effervescent; moderately alkaline (pH 8.4).

#### Typical Pedon Location

*Map unit in which located:* Hessing silt loam

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 61 miles southwest of Battle

Mountain; about 790 feet east and 300 feet north of the southwest corner of sec. 7, T. 24 N., R. 41 E.

### Range in Characteristics

*Soil moisture content:* Usually dry, but moist in some part for short periods from October through May

*Average annual soil temperature:* 47 to 53 degrees F

*Depth to the base of the Bw horizon:* 11 to 16 inches

*Depth to the unconformable 2Ck horizon:* 15 to 25 inches

*Depth to the unconformable 3Ck horizon:* 25 to 36 inches

*Other characteristics:* As much as 50 percent thin, discontinuous, weakly silica-cemented lenses and as much as 20 percent weak durinodes present below a depth of 11 inches in some pedons

### Control section:

Texture—averages gravelly loam or gravelly sandy loam

Content of clay—8 to 18 percent when mixed

Content of rock fragments—15 to 35 percent when mixed

### A horizon:

Hue—2.5Y or 10YR

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3

Structure—thin to thick and platy, fine to coarse and prismatic, or massive

Reaction—moderately alkaline or strongly alkaline

Other characteristics—slightly effervescent in some pedons because of calcareous dust recharge

### Bw horizon:

Hue—2.5Y or 10YR

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3

Texture—silt loam or silty clay loam

Structure—platy, prismatic, angular blocky, subangular blocky, or massive

### 2Ck horizon:

Texture—gravelly loam or gravelly sandy loam

Content of clay—15 to 30 percent

Content of rock fragments—15 to 35 percent, mainly pebbles

Consistence—slightly plastic or plastic (wet)

### 3Ck horizon:

Texture—stratified very gravelly loamy coarse sand to extremely gravelly sand

Content of rock fragments—50 to 70 percent, mainly pebbles

Consistence—soft or loose (dry), nonplastic or slightly plastic (wet)

Reaction—mildly alkaline to strongly alkaline

## Hooplite Series

*Depth class:* Very shallow or shallow

*Drainage class:* Well drained

*Parent material:* Residuum derived from rhyolitic rock and undifferentiated volcanic rock

*Positions on landscape:* Side slopes of hills and mountains

*Slope:* 4 to 50 percent

*Mean annual precipitation:* About 9 inches

*Mean annual temperature:* About 47 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, mesic Lithic Xerollic Haplargids

### Typical Pedon

About 10 percent of the surface is covered with cobbles and 45 percent with pebbles.

A1—0 to 2 inches; light brownish gray (10YR 6/2) very gravelly fine sandy loam, dark grayish brown (10YR 4/2) moist; moderate medium platy structure; slightly hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; many fine and medium vesicular pores; 40 percent pebbles and 5 percent cobbles; slightly effervescent; mildly alkaline (pH 7.6); clear smooth boundary.

A2—2 to 4 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; moderate medium platy structure; soft, very friable, sticky and plastic; common very fine and fine roots; common very fine and fine interstitial and tubular pores; 20 percent pebbles and 5 percent cobbles; common thin strongly effervescent lime coatings on the underside of rock fragments; slightly effervescent in matrix; mildly alkaline (pH 7.8); clear wavy boundary.

Bt—4 to 8 inches; light yellowish brown (10YR 6/4) very gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common very fine and fine interstitial and tubular pores; 45 percent pebbles and 5 percent cobbles; common thin lime coatings on the underside of rock fragments; strongly effervescent; moderately alkaline (pH 8.0); clear wavy boundary.

R—8 inches; hard, fractured rhyolitic tuff.

### Typical Pedon Location

*Soil name and map unit in which located:* Hooplite very gravelly fine sandy loam, 4 to 15 percent slopes, in Hooplite-Stingdorn association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 25 miles northeast of

Austin: about 1,100 feet south of the northwest corner of sec. 25, T. 22 N., R. 46 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and early in spring, dry in mid-June through October

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to hard bedrock:* 6 to 14 inches

*Other characteristics:* As much as 3 inches of highly fractured bedrock overlying the lithic contact in some pedons

#### Control section:

Content of clay—18 to 25 percent when mixed

Content of rock fragments—35 to 50 percent pebbles, 0 to 10 percent cobbles

Reaction—mildly alkaline or moderately alkaline

#### A horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3

Effervescence—noneffervescent or slightly effervescent

Structure—platy or subangular blocky

#### Bt horizon:

Hue—10YR or 7.5YR

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 to 4

Texture—very gravelly loam or very gravelly clay loam

Content of rock fragments—35 to 50 percent

Structure—subangular blocky or granular

Effervescence—slightly effervescent or strongly effervescent

### Hopeka Series

*Depth class:* Very shallow

*Drainage class:* Well drained

*Parent material:* Residuum derived from limestone and dolostone

*Positions on landscape:* Side slopes of mountains

*Slope:* 30 to 50 percent

*Mean annual precipitation:* About 12 inches

*Mean annual temperature:* About 43 degrees F

**Taxonomic class:** Loamy-skeletal, carbonatic, frigid  
Lithic Xeric Torriorthents

#### Typical Pedon

About 20 percent of the surface is covered with pebbles and 25 percent with cobbles.

A—0 to 4 inches; light brownish gray (10YR 6/2) very gravelly loam, very dark grayish brown (10YR 3/2)

moist; moderate fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many fine and very fine roots and few medium and coarse roots; many very fine and fine interstitial pores and common fine tubular pores; 50 percent pebbles; lime coatings on the underside of pebbles; violently effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

C—4 to 8 inches; grayish brown (10YR 5/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots and few coarse roots; common fine interstitial pores and common very fine and fine and few medium tubular pores; 55 percent pebbles; lime coatings on the underside of pebbles; violently effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary.

R—8 inches; limestone.

#### Typical Pedon Location

*Soil name and map unit in which located:* Hopeka very gravelly loam, 30 to 50 percent slopes, in Kram-Hopeka-Rock outcrop association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 20 miles west of Austin; about 550 feet south and 1,050 feet west of the northeast corner of sec. 32, T. 21 N., R. 42 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in June to mid-October

*Average annual soil temperature:* 43 to 47 degrees

*Depth to bedrock:* 4 to 10 inches

*Calcium carbonate equivalent:* 40 to 85 percent

*Reaction:* Moderately alkaline or strongly alkaline

*Effervescence:* Dominantly violently effervescent, but strongly effervescent in the upper part in some pedons

#### Control section:

Content of clay—18 to 25 percent

Content of rock fragments—35 to 60 percent limestone or dolostone pebbles, cobbles, or stones

#### A horizon:

Hue—10YR or 7.5YR

Value—5 to 7 dry, 3 or 4 moist

Chroma—2 or 3

#### C horizon:

Hue—10YR or 7.5YR

Value—5 to 7 dry, 3 or 4 moist

Chroma—2 or 3

Structure—weak or moderate and subangular blocky, or massive

### **Hymas Series**

*Depth class:* Shallow

*Drainage class:* Well drained

*Parent material:* Residuum and colluvium derived from limestone

*Positions on landscape:* Crests and side slopes of mountains

*Slope:* 30 to 50 percent

*Mean annual precipitation:* About 14 inches

*Mean annual temperature:* About 45 degrees F

**Taxonomic class:** Loamy-skeletal, carbonatic, frigid Lithic Haploxerolls

#### **Typical Pedon**

About 20 percent of the surface is covered with pebbles and 5 percent with cobbles.

A1—0 to 5 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine interstitial and tubular pores; 20 percent pebbles and 5 percent cobbles; thin violently effervescent lime coatings on rock fragments; slightly effervescent in matrix; moderately alkaline (pH 8.0); clear smooth boundary.

A2—5 to 9 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate fine and medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common very fine and fine interstitial and tubular pores; 15 percent pebbles and 5 percent cobbles; violently effervescent in matrix; moderately alkaline (pH 8.0); clear wavy boundary.

C—9 to 15 inches; pale brown (10YR 6/3) very cobbly loam, dark brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and plastic; common very fine, fine, and medium roots and few coarse roots; common very fine and fine interstitial and tubular pores; 30 percent pebbles and 15 percent cobbles; thick violently effervescent lime coatings and pendants on rock fragments; slightly effervescent in matrix; moderately alkaline (pH 8.2); abrupt wavy boundary.

2R—15 inches; fractured limestone.

#### **Typical Pedon Location**

*Soil name and map unit in which located:* Hymas gravelly loam, 30 to 50 percent slopes, in Hymas-Xine-Attella association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 12 miles north of Austin; about 1,770 feet west and 600 feet north of the southeast corner of sec. 21, T. 21 N., R. 44 E.

#### **Range in Characteristics**

*Soil moisture content:* Moist late in fall and in winter and spring, dry late in June through September

*Average annual soil temperature:* 42 to 47 degrees F

*Average summer soil temperature:* 59 to 66 degrees F

*Thickness of the mollic epipedon:* 7 to 14 inches

*Depth to bedrock:* 10 to 20 inches

*Control section:*

Content of clay—8 to 27 percent

Content of rock fragments—35 to 80 percent, dominantly angular limestone fragments

*A horizon:*

Hue—10YR or 2.5Y

Value—4.5 to 5.5 dry, 2.5 to 3.5 moist

Chroma—2 or 3 moist or dry

Structure—weak or moderate and platy or granular

Reaction—neutral to moderately alkaline

Effervescence—slightly effervescent or strongly effervescent

*C horizon:*

Hue—10YR or 2.5Y

Value—5 to 8 dry, 4 to 7 moist

Chroma—2.0 to 3.5 moist or dry

Content of rock fragments—averages 35 to 80 percent

Structure—massive, or weak and subangular blocky or granular

Reaction—mildly alkaline or moderately alkaline

### **Isolde Series**

*Depth class:* Very deep

*Drainage class:* Excessively drained

*Parent material:* Eolian sand derived from various kinds of rock

*Positions on landscape:* Stabilized dunes on lakebeds, playas, terraces, alluvial fans, and uplands

*Slope:* 0 to 30 percent

*Mean annual precipitation:* About 6 inches

*Mean annual temperature:* About 52 degrees F

**Taxonomic class:** Mixed, mesic Typic Torripsamments

**Typical Pedon**

- A—0 to 7 inches; pale brown (10YR 6/3) fine sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; common very fine and fine roots; many very fine and fine interstitial pores; moderately alkaline (pH 8.2); clear smooth boundary.
- C1—7 to 26 inches; pale brown (10YR 6/3) fine sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; few very fine and fine roots; many very fine and fine interstitial pores; moderately alkaline (pH 8.4); diffuse smooth boundary.
- C2—26 to 60 inches; pale brown (10YR 6/3) fine sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; common very fine and fine roots; many very fine and fine interstitial pores; slightly effervescent; moderately alkaline (pH 8.4).

**Typical Pedon Location**

*Soil name and map unit in which located:* Isolde fine sand, 4 to 30 percent slopes, in Bubus-Isolde association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 20 miles southwest of Battle Mountain; about 2,100 feet west and 1,300 feet south of the northeast corner of sec. 4, T. 29 N., R. 42 E.

**Range in Characteristics**

*Soil moisture content:* Usually dry in April to mid-November, moist for short periods in mid-November through March

*Average annual soil temperature:* 53 to 57 degrees F

*Control section:*

Texture—dominantly fine sand, but sand in some pedons

Reaction—neutral to moderately alkaline

*A horizon:*

Hue—10YR or 2.5Y

Value—5 to 7 dry, 4 or 5 moist

Chroma—2 or 3

*C horizon:*

Hue—10YR or 2.5Y

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3

Reaction—moderately alkaline or strongly alkaline in the lower part

Effervescence—noneffervescent to strongly effervescent in the lower part

Other characteristics—2C horizon present below a depth of 40 inches in some pedons

**Itca Series**

*Depth class:* Shallow

*Drainage class:* Well drained

*Parent material:* Residuum derived from extrusive volcanic and pyroclastic rock

*Positions on landscape:* Side slopes of mountains

*Slope:* 15 to 75 percent

*Mean annual precipitation:* About 14 inches

*Mean annual temperature:* About 43 degrees F

**Taxonomic class:** Clayey-skeletal, montmorillonitic, frigid Lithic Argixerolls

**Typical Pedon**

About 20 percent of the surface is covered with pebbles, 35 percent with cobbles, and 25 percent with stones.

A1—0 to 6 inches; grayish brown (10YR 5/2) extremely stony loam, very dark grayish brown (10YR 3/2) moist; weak thick platy structure parting to weak very fine granular; slightly hard, very friable, nonsticky and slightly plastic; many very fine and few fine roots; many fine interstitial pores; 30 percent pebbles, 15 percent cobbles, and 15 percent stones; neutral (pH 7.2); clear wavy boundary.

A2—6 to 9 inches; brown (10YR 5/3) gravelly sandy loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common fine and medium roots; common fine interstitial pores; 20 percent pebbles and 5 percent cobbles; mildly alkaline (pH 7.4); abrupt wavy boundary.

Bt1—9 to 13 inches; pale brown (10YR 6/3) very gravelly clay loam, dark brown (10YR 4/3) moist; weak medium prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, very sticky and very plastic; common fine roots and few medium and coarse roots; common fine interstitial pores; many thin clay films in pores and on peds; 25 percent pebbles and 15 percent cobbles; mildly alkaline (pH 7.4); clear irregular boundary.

Bt2—13 to 17 inches; light yellowish brown (10YR 6/4) very cobbly clay, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure; hard, firm, very sticky and very plastic; few fine, medium, and coarse roots; few fine tubular pores; common moderately thick clay films in pores and on peds; 20 percent pebbles, 20 percent cobbles, and 10 percent stones; mildly alkaline (pH 7.4); abrupt broken boundary.

R—17 inches; fractured andesite.

### Typical Pedon Location

*Soil name and map unit in which located:* Itca extremely stony loam, 50 to 75 percent slopes, in Itca-Ninemile-Rock outcrop association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 22 miles east of Austin; about 1,950 feet east and 320 feet south of the northwest corner of sec. 21, T. 2 S., R. 40 E.

### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry for 60 to 90 days consecutively in July through October

*Average annual soil temperature:* 43 to 47 degrees F

*Thickness of the mollic epipedon:* 7 to 15 inches (includes the upper part of the Bt horizon in some pedons)

*Depth to bedrock:* 10 to 20 inches

#### A horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3

Structure—weak or moderate, medium or thick, and platy; or weak or moderate, medium or coarse, and subangular blocky

Consistence—soft or slightly hard (dry), very friable or friable (moist), nonsticky to slightly sticky and slightly plastic to plastic (wet)

Reaction—neutral or mildly alkaline

#### Bt horizon:

Hue—7.5YR or 10YR

Value—4 to 6 dry, 3 or 4 moist

Chroma—2 to 4

Texture—clay or clay loam

Content of clay—35 to 45 percent

Content of rock fragments—averages 35 to 60 percent, mainly pebbles and cobbles, but as much as 85 percent in the lower part in some pedons

Consistence—slightly hard or hard (dry), friable or firm (moist), sticky or very sticky (wet)

Reaction—neutral to moderately alkaline

Other characteristics—thin BC or C horizon that is dominantly very soft, decomposing rock present in some pedons; tongues of Bt horizon extending into the fractures in the underlying bedrock in the shallower areas

### Itca Variant

*Depth class:* Shallow

*Drainage class:* Well drained

*Parent material:* Residuum derived from tuffaceous sediment

*Positions on landscape:* Convex side slopes of mountains

*Slope:* 15 to 30 percent

*Mean annual precipitation:* About 12 inches

*Mean annual temperature:* About 45 degrees F

**Taxonomic class:** Loamy, mixed, frigid, shallow Aridic Argixerolls

### Typical Pedon

About 30 percent of the surface is covered with pebbles and 5 percent with cobbles.

A—0 to 3 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure parting to moderate fine granular; slightly hard, friable, sticky and plastic; few very fine, medium, and coarse roots; many very fine and fine interstitial pores; 30 percent pebbles and 5 percent cobbles; slightly effervescent; mildly alkaline (pH 7.8); abrupt smooth boundary.

Bt—3 to 8 inches; grayish brown (10YR 5/2) gravelly clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, very sticky and very plastic; common fine and medium roots and few coarse roots; common very fine and fine tubular pores; common moderately thick clay films on faces of peds; 15 percent pebbles; strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.

Btk—8 to 12 inches; light yellowish brown (10YR 6/4) clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure; hard, firm, very sticky and very plastic; common fine and medium roots and few coarse roots; common very fine and fine tubular pores; common thin and few moderately thick clay films on faces of peds; 10 percent pebbles; few fine lime masses; strongly effervescent; mildly alkaline (pH 7.8); clear wavy boundary.

Cr—12 to 24 inches; weathered tuffaceous sediment that is highly fractured in the upper part; few fine roots along fractures.

### Typical Pedon Location

*Soil name and map unit in which located:* Itca Variant very gravelly loam, 15 to 30 percent slopes, in Itca Variant-Reluctan-Handy association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 19 miles north of Austin; about 500 feet north and 1,700 feet west of the southeast corner of sec. 28, T. 22 N., R. 44 E.

### Range in Characteristics

*Soil moisture content:* Moist in some part in mid-October

to mid-June, dry in summer and early in fall

*Average annual soil temperature:* 44 to 47 degrees F

*Thickness of the mollic epipedon:* 7 to 14 inches

(includes the Bt horizon)

*Depth to paralithic contact:* 10 to 20 inches

*Effervescence:* Dominantly slightly effervescent to strongly effervescent, but noneffervescent in the upper part in some pedons

*Reaction:* Mildly alkaline or moderately alkaline

*Control section:*

Texture (when mixed)—loam, clay loam, sandy clay loam, or gravelly loam

Content of clay—25 to 35 percent

Content of rock fragments—0 to 20 percent, mainly pebbles

*A horizon:*

Value—4 or 5 dry

Chroma—2 or 3

## Izo Series

*Depth class:* Very deep

*Drainage class:* Excessively drained

*Parent material:* Alluvium derived from mixed igneous and sedimentary rock

*Positions on landscape:* Channels, inset fans, fan skirts

*Slope:* 0 to 4 percent

*Mean annual precipitation:* About 6 inches

*Mean annual temperature:* About 51 degrees F

**Taxonomic class:** Sandy-skeletal, mixed, mesic Typic Torriorthents

### Typical Pedon

A—0 to 2 inches; very pale brown (10YR 7/3) gravelly loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; common very fine and fine roots; few medium and many very fine and fine vesicular pores; 15 percent pebbles; strongly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary.

C1—2 to 8 inches; light gray (2.5Y 7/2) gravelly loamy sand, light olive brown (2.5Y 5/4) moist; single grain; loose, nonsticky and nonplastic; common very fine and fine roots; many very fine and fine interstitial pores; 30 percent pebbles; white (2.5Y 8/2) very thin lime coatings on the underside of 30 percent of pebbles; strongly effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

C2—8 to 34 inches; light gray (2.5Y 7/2) very gravelly coarse sand, light olive brown (2.5Y 5/4) moist; single grain; loose, nonsticky and nonplastic;

common very fine roots; many very fine interstitial pores; 55 percent pebbles; white (2.5Y 8/2) very thin lime coatings on the underside of 30 percent of pebbles; strongly effervescent; strongly alkaline (pH 8.8); gradual wavy boundary.

C3—34 to 60 inches; light brownish gray (2.5Y 6/2) very gravelly coarse sand, grayish brown (2.5Y 5/2) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; many very fine interstitial pores; 55 percent pebbles; slightly effervescent; strongly alkaline (pH 8.6).

### Typical Pedon Location

*Soil name and map unit in which located:* Izo gravelly loam, 0 to 4 percent slopes, in Izo-Bubus association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 26 miles southeast of Austin; about 1,850 feet south and 800 feet east of the northwest corner of sec. 12, T. 15 N., R. 44 E.

### Range in Characteristics

*Soil moisture content:* Usually dry, but moist in some part for short periods in winter and early in spring and for 10 to 20 days cumulatively in July through October as a result of convection storms

*Average annual soil temperature:* 53 to 59 degrees F

*Reaction:* Moderately alkaline or strongly alkaline, commonly increasing in alkalinity with increasing depth

*Effervescence:* Slightly effervescent to strongly effervescent

*Other characteristics:* Thin noncalcareous strata in some pedons

*Control section:*

Texture (fraction less than 2 millimeters)—stratified coarse sand, loamy sand, or loamy coarse sand  
Content of rock fragments—averages 50 to 75 percent, mainly pebbles

*A horizon:*

Value—6 or 7 dry, 4 or 5 moist

Chroma—3 or 4

Structure—platy, massive, or single grain

*C horizon:*

Hue—2.5Y or 10YR

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 to 4

Structure—massive or single grain

Texture (fraction less than 2 millimeters)—

commonly stratified sand, coarse sand, loamy sand, or loamy coarse sand

Content of rock fragments—dominantly 50 to 75 percent, mainly pebbles, but strata that are 15



to 85 percent rock fragments present in some pedons  
 Other characteristics—coatings of lime on as much as 50 percent of the underside of the rock fragments in some pedons

### Izod Series

**Depth class:** Very shallow or shallow

**Drainage class:** Well drained

**Parent material:** Residuum derived from shale and some limestone, dolomite, and sandstone

**Positions on landscape:** Side slopes and crests of hills and mountains

**Slope:** 15 to 75 percent

**Mean annual precipitation:** About 9 inches

**Mean annual temperature:** About 47 degrees F

**Taxonomic class:** Loamy-skeletal, carbonatic, mesic  
 Lithic Xeric Torriorthents

#### Typical Pedon

About 30 percent of the surface is covered with pebbles, 25 percent with cobbles, and 5 percent with stones.

A—0 to 4 inches; pale brown (10YR 6/3) extremely cobbly fine sandy loam, dark brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, very friable, nonsticky and nonplastic; common fine roots; many very fine vesicular pores; 35 percent pebbles and 35 percent cobbles; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary.

C—4 to 10 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and slightly plastic; common very fine and fine roots; common very fine interstitial pores; 30 percent pebbles, 10 percent cobbles, and 5 percent stones; few fine soft lime masses; violently effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.

2R—10 inches; limestone that is weathered and fractured in the upper 1 inch and is hard below this depth; few fine roots in fractures; common lime pendants on rock fragments.

#### Typical Pedon Location

**Soil name and map unit in which located:** Izod extremely cobbly fine sandy loam, 15 to 50 percent slopes, in Izod-Rock outcrop association

**Location in Nevada:** Lander County, Nevada, North Part, survey area; about 52 miles southwest of Battle Mountain; about 1,800 feet north and 800 feet east of the southwest corner of sec. 5, T. 24 N., R. 40 E.

#### Range in Characteristics

**Soil moisture content:** Moist late in fall to early in spring, dry in June through October

**Average annual soil temperature:** 47 to 50 degrees F

**Depth to bedrock:** 7 to 14 inches

**Reaction:** Mildly alkaline or moderately alkaline

**Calcium carbonate equivalent:** 50 to 60 percent

**Other characteristics:** Silica and lime laminae commonly covering as much as 75 percent of the underlying bedrock

**Control section:**

Content of clay—18 to 25 percent

Content of rock fragments—40 to 75 percent, mainly pebbles

**A horizon:**

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3

Structure—weak or moderate, very thin or thin, and platy

Effervescence—strongly effervescent or violently effervescent

**C horizon:**

Value—6 to 8 dry, 4 or 5 moist

Chroma—2 or 3

Structure—weak or moderate and subangular blocky, or massive

### Jesse Camp Series

**Depth class:** Very deep

**Drainage class:** Well drained

**Parent material:** Silty alluvium that is derived mainly from volcanic rock and includes some volcanic ash

**Positions on landscape:** Inset fans, stream terraces

**Slope:** 0 to 2 percent

**Mean annual precipitation:** About 8 inches

**Mean annual temperature:** About 44 degrees F

**Taxonomic class:** Fine-silty, mixed, frigid Xerollic  
 Camborthids

#### Typical Pedon

A—0 to 4 inches; light brownish gray (10YR 6/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate thin platy structure; soft, very friable, slightly sticky and slightly plastic; many fine and medium roots; many fine and medium vesicular and interstitial pores; moderately alkaline (pH 8.2); abrupt smooth boundary.

Bw—4 to 12 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common

very fine and coarse roots; common very fine and medium tubular pores; moderately alkaline (pH 8.2); clear wavy boundary.

Bqk1—12 to 26 inches; light brownish gray (10YR 6/2) silt loam, brown (10YR 4/3) moist; weak medium prismatic structure parting to moderate thin platy; hard, friable, slightly sticky and slightly plastic; few fine and medium roots; common fine and medium tubular pores; 5 percent durinodes; strongly effervescent; moderately alkaline (pH 8.4); gradual smooth boundary.

Bqk2—26 to 60 inches; light brownish gray (10YR 6/2) silt loam, brown (10YR 4/3) moist; moderate thin platy structure; hard, friable, slightly sticky and slightly plastic; few fine roots; few fine tubular pores; 15 percent durinodes; common medium faint light gray (10YR 7/2) lime seams; strongly effervescent; moderately alkaline (pH 8.4).

#### Typical Pedon Location

*Soil name and map unit in which located:* Jesse Camp silt loam, 0 to 2 percent slopes, in Fenster-Jesse Camp association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 22 miles east of Austin; about 400 feet south and 700 feet west of the northeast corner of sec. 19, T. 19 N., R. 48 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in June through October

*Average annual soil temperature:* 45 to 47 degrees F

*Combined thickness of the A and Bw horizons:* 10 to 17 inches

*Content of clay in the control section:* 18 to 27 percent

*Other characteristics:* C horizon below a depth of 50 inches in some pedons

#### A horizon:

Hue—10YR or 2.5Y

Value—6 or 7 dry, 3 or 4 moist

Chroma—2 or 3

Structure—weak or moderate, very thin to medium, and platy, or massive

Consistence—soft or slightly hard

Effervescence—noneffervescent or slightly effervescent

#### Bw horizon:

Hue—10YR or 2.5Y

Value—6 or 7 dry, 3 or 4 moist

Chroma—2 or 3

Texture—silt loam or very fine sandy loam

Structure—weak or moderate, very thin to medium, and platy; or weak, fine or medium, and subangular blocky

Effervescence—noneffervescent or slightly effervescent

#### Bk horizon:

Hue—10YR or 2.5Y

Value—6 or 7 dry, 3 or 4 moist

Chroma—2 or 3

Texture—dominantly silt loam, but thin strata of very fine sandy loam or silty clay loam

Structure—prismatic, angular blocky, or massive

Reaction—moderately alkaline to very strongly alkaline

Effervescence—strongly effervescent or violently effervescent

Other characteristics—few to many, very fine, fine, and medium, soft lime masses, filaments, or seams in the lower part; as much as 20 percent brittle durinodes in a friable matrix (durinodes are as much as 0.5 inch in diameter and 0.5 to 2.0 inches in length and are hard to extremely hard)

### Jung Series

*Depth class:* Shallow

*Drainage class:* Well drained

*Parent material:* Residuum derived from metavolcanic and volcanic rock

*Positions on landscape:* Crests and side slopes of mountains and hills

*Slope:* 4 to 50 percent

*Mean annual precipitation:* About 9 inches

*Mean annual temperature:* About 48 degrees F

**Taxonomic class:** Clayey-skeletal, montmorillonitic, mesic Lithic Xerollic Haplargids

#### Typical Pedon

About 20 percent of the surface is covered with pebbles and 25 percent with cobbles.

A1—0 to 3 inches; light brownish gray (10YR 6/2) very cobbly loam, dark grayish brown (10YR 4/2) moist; weak thin platy structure parting to weak very fine granular; soft, very friable, slightly sticky and slightly plastic; few fine roots; many fine vesicular pores; 25 percent pebbles and 25 percent cobbles; neutral (pH 7.0); clear smooth boundary.

A2—3 to 8 inches; light brownish gray (10YR 6/2) cobbly loam, dark brown (10YR 3/3) moist; weak thin platy structure parting to weak very fine granular; soft, very friable, slightly sticky and slightly plastic; common fine roots; many very fine interstitial pores; 10 percent pebbles and 20 percent cobbles; neutral (pH 7.2); clear wavy boundary.

- Bt**—8 to 15 inches; brown (10YR 5/3) very cobbly clay loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure parting to moderate medium and fine subangular blocky; very hard, firm, sticky and plastic; common fine roots; few very fine tubular pores; continuous thick clay films on peds; 20 percent pebbles and 20 percent cobbles; moderately alkaline (pH 8.4); gradual wavy boundary.
- Btk**—15 to 19 inches; pale brown (10YR 6/3) very cobbly clay loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; hard, firm, sticky and plastic; few fine roots; few very fine tubular pores; thin discontinuous clay films on peds; 30 percent pebbles and 20 percent cobbles; lime coatings on the underside of rock fragments; slightly effervescent; moderately alkaline (pH 8.4); abrupt irregular boundary.
- R**—19 inches; fractured, hard rhyolite; fractures more than 4 inches apart.

#### Typical Pedon Location

*Soil name and map unit in which located:* Jung very cobbly loam, 15 to 30 percent slopes, in Newpass-Jung association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; in cut at side of powerline access road about 17.5 miles west of Austin, near Mount Airy; about 50 feet south and 1,300 feet west of the northeast corner of sec. 5, T. 19 N., R. 41 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in mid-June to early in November

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to bedrock:* 14 to 20 inches

#### Control section:

Content of clay—35 to 45 percent

Content of rock fragments—35 to 50 percent, mainly pebbles and cobbles

#### A horizon:

Value—3 or 4 moist

Chroma—2 or 3

Structure—weak or moderate, thin or medium, and platy

Reaction—neutral or mildly alkaline

#### Bt horizon:

Hue—10YR or 7.5YR

Value—5 or 6 dry, 4 or 5 moist

Chroma—3 or 4

Texture—very gravelly clay loam, very cobbly clay loam, or very cobbly clay

Structure—dominantly weak to strong and prismatic

or angular blocky, but subangular blocky in the lower part in some pedons

Reaction—moderately alkaline or strongly alkaline

#### Btk horizon:

Effervescence—slightly effervescent or strongly effervescent

### Kawich Series

*Depth class:* Very deep

*Drainage class:* Excessively drained

*Parent material:* Eolian sand derived from various kinds of rock

*Positions on landscape:* Stabilized dunes

*Slope:* 4 to 30 percent

*Mean annual precipitation:* About 6 inches

*Mean annual temperature:* About 53 degrees F

*Taxonomic class:* Mixed, mesic Typic Torripsamments

#### Typical Pedon

**A**—0 to 4 inches; very pale brown (10YR 7/3) fine sand, brown (10YR 5/3) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few fine and medium roots; common fine and medium interstitial pores; slightly effervescent; strongly alkaline (pH 8.6); clear smooth boundary.

**C1**—4 to 42 inches; very pale brown (10YR 7/3) fine sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; common fine and medium roots; many fine interstitial pores and common fine tubular pores; strongly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary.

**C2**—42 to 52 inches; pale brown (10YR 6/3) fine sand, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few fine tubular pores; violently effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary.

**C3**—52 to 54 inches; white (10YR 8/2) fine sand (volcanic ash), light brownish gray (10YR 6/2) moist; massive; soft, very friable, nonsticky and nonplastic; few fine tubular pores; violently effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary.

**C4**—54 to 60 inches; very pale brown (10YR 7/3) fine sand, brown (10YR 5/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few fine tubular pores; strongly effervescent; strongly alkaline (pH 8.8).

#### Typical Pedon Location

*Soil name and map unit in which located:* Kawich fine sand, 4 to 30 percent slopes, in Yobe-Kawich-Playas association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 26 miles south of Austin; about 550 feet east of the southwest corner of sec. 8, T. 15 N., R. 45 E.

### Range in Characteristics

*Soil moisture content:* Usually dry, but moist in some part for short periods in winter and early in spring and for 10 to 20 days cumulatively in July and October as a result of convection storms

*Average annual soil temperature:* 54 to 59 degrees F

*Depth to unconformable material:* 40 to more than 120 inches

*Texture of the control section:* Averages fine sand, but strata of sand or loamy fine sand present in some pedons

*Effervescence:* Slightly effervescent to violently effervescent

*Reaction:* Moderately alkaline to very strongly alkaline

*Hue:* 10YR or 7.5YR

*Value:* 5 to 8 dry, 4 to 6 moist

*Chroma:* 2 to 4

*Other characteristics:* Significant amounts of pyroclastic material present

### Kelk Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Loess that includes some volcanic ash and mixed silty alluvium derived from various kinds of rock

*Positions on landscape:* Inset fans, alluvial plains

*Slope:* 0 to 4 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* 48 degrees F

**Taxonomic class:** Fine-silty, mixed, mesic Durixerollic Camborthids

### Typical Pedon

A—0 to 4 inches; light brownish gray (10YR 6/2) very fine sandy loam, dark brown (10YR 3/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine vesicular pores; neutral (pH 7.2); abrupt smooth boundary.

Bw—4 to 12 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, very sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores; neutral (pH 7.2); clear smooth boundary.

Bq1—12 to 20 inches; very pale brown (10YR 7/3) silt

loam, brown (10YR 5/3) moist; massive; slightly hard, friable, very sticky and plastic; few very fine and fine roots; few very fine tubular pores; 20 percent hard, firm, strongly cemented durinodes; 20 percent discontinuous weak cementation; mildly alkaline (pH 7.4); clear wavy boundary.

Bq2—20 to 27 inches; light gray (10YR 7/2) silt loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine tubular pores; 40 percent hard, firm, strongly cemented durinodes; 20 percent discontinuous weak cementation; moderately alkaline (pH 8.4); clear wavy boundary.

Bqk1—27 to 31 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; massive; hard, firm, nonsticky and nonplastic; few very fine and fine roots; few very fine tubular pores; 40 percent strongly cemented durinodes in continuous, weakly silica-cemented matrix; 5 percent pebbles; common fine seams and threads of lime; strongly effervescent; strongly alkaline (pH 8.6); clear wavy boundary.

Bqk2—31 to 40 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; massive; hard, firm, slightly sticky and slightly plastic; common very fine and fine roots; few very fine tubular pores; 40 percent strongly cemented durinodes in continuous, weakly silica-cemented matrix; common fine seams and threads of lime; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary.

2Bk—40 to 60 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 4/3) moist; few faint light yellowish brown (10YR 6/4) mottles; moderate medium platy structure parting to fine medium angular blocky; hard, friable, very sticky and very plastic; few very fine and fine roots; few very fine tubular pores; few fine seams and threads of lime; common moderately thick pressure faces; slightly effervescent; strongly alkaline (pH 8.6).

### Typical Pedon Location

*Soil name and map unit in which located:* Kelk very fine sandy loam, lacustrine substratum, 0 to 2 percent slopes, in Allor-Kelk association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; in an unsectionalized area about 1,100 feet east and 550 feet south of the northwest corner of the assumed sec. 6, T. 14 N., R. 38 E.

### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry early in June through October

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to the base of the Bw horizon:* 12 to 18 inches

*Depth to continuous, weak, silica cementation:* 18 to 35 inches

*Depth to carbonates:* 12 to 35 inches

*Content of clay in the control section:* 18 to 25 percent

*Other characteristics:* Typically slightly or moderately affected by salt below a depth of 24 to 48 inches

**A horizon:**

Hue—10YR or 2.5Y

Structure—very thin or thin and platy, very fine or fine and prismatic, or massive

Consistence—slightly sticky or sticky and slightly plastic or plastic

Reaction—neutral to moderately alkaline

Effervescence—noneffervescent or slightly effervescent

**Bw horizon:**

Value—6 or 7 dry, 3 or 4 moist

Chroma—2 or 3

Structure—angular blocky, subangular blocky, prismatic, or massive

Reaction—dominantly neutral to moderately alkaline, but strongly alkaline in the lower part

Effervescence—noneffervescent or slightly effervescent

Other characteristics—10 to 20 percent weak durinodes in the lower part in some pedons

**Bq and Bqk horizons:**

Value—6 to 8 dry, 3 to 6 moist

Chroma—2 to 4

Texture—dominantly silt loam, but thin strata of silty clay loam common in some pedons below a depth of 30 inches

Reaction—neutral to strongly alkaline, increasing in alkalinity with increasing depth

Effervescence (Bqk horizon)—slightly effervescent to violently effervescent

Other characteristics—strata are discontinuously cemented with silica and are 30 to 90 percent durinodes or are 20 to 50 percent discontinuously weakly cemented with silica; relict mottles absent in the lower part of the Bqk horizon in some pedons; lenses that are 5 to 15 percent pebbles in the Bqk horizon in some pedons; extremely gravelly strata below a depth of 42 inches in some pedons; silty clay loam 2Bk horizon below a depth of 39 inches in some pedons

### **Kingingham Series**

*Depth class:* Moderately deep to duripan

*Drainage class:* Well drained

*Parent material:* Thin mantle of loess over alluvium derived from various kinds of rock

*Slope:* 2 to 4 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 48 degrees F

**Taxonomic class:** Fine, montmorillonitic, mesic Typic Nadurargids

### **Typical Pedon**

About 20 percent of the surface is covered with pebbles.

A1—0 to 3 inches; very pale brown (10YR 7/3) gravelly very fine sandy loam, dark brown (10YR 4/3) moist; moderate thin platy structure; soft, very friable, nonsticky and nonplastic; few fine and medium roots; many very fine and fine vesicular pores; 15 percent pebbles; moderately alkaline (pH 8.4); abrupt smooth boundary.

A2—3 to 7 inches; pale brown (10YR 6/3) gravelly very fine sandy loam, dark brown (10YR 4/3) moist; strong thick platy structure; hard, friable, slightly sticky and slightly plastic; common fine and medium roots; many very fine and fine vesicular pores; 20 percent pebbles; moderately alkaline (pH 8.2); clear wavy boundary.

2Btk1—7 to 12 inches; light yellowish brown (10YR 6/4) gravelly clay loam, yellowish brown (10YR 5/4) moist; strong medium angular blocky structure; slightly hard, very friable, very sticky and very plastic; common fine and medium roots; many very fine and fine tubular pores; common moderately thick clay films on faces of peds and lining pores; 15 percent pebbles; common fine seams of lime; slightly effervescent in matrix; strongly alkaline (pH 8.6); clear wavy boundary.

2Btk2—12 to 18 inches; yellowish brown (10YR 5/4) gravelly clay, dark yellowish brown (10YR 4/4) moist; strong medium prismatic structure; hard, firm, very sticky and very plastic; common fine and medium roots; common very fine tubular pores; many moderately thick and thick clay films on faces of peds and lining pores; 20 percent pebbles; common fine seams of lime; slightly effervescent in matrix; strongly alkaline (pH 8.8); clear wavy boundary.

2Btk—18 to 22 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; strong medium angular blocky structure; hard, firm, very sticky and very plastic; few fine roots; few very fine tubular pores; many moderately thick clay films on faces of peds and lining pores; 10 percent weakly cemented durinodes; 50 percent pebbles; common fine seams

of lime; strongly effervescent; strongly alkaline (pH 8.6); abrupt irregular boundary.

2Bqkm1—22 to 28 inches; very pale brown (10YR 8/3), indurated duripan, very pale brown (10YR 7/4) moist; massive; extremely hard, extremely firm; violently effervescent.

2Bqkm2—28 to 60 inches; very pale brown (10YR 8/3), indurated duripan alternating with thin horizontal lenses that are weakly to strongly cemented; very pale brown (10YR 7/4) moist; massive; violently effervescent.

#### Typical Pedon Location

*Soil name and map unit in which located:* Kingingham gravelly very fine sandy loam, 2 to 8 percent slopes, in Kingingham-Golconda-Whirlo association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 20 miles south of Battle Mountain; about 2,630 feet south and 2,630 feet east of the northwest corner of sec. 6, T. 30 N., R. 43 E.

#### Range in Characteristics

*Soil moisture content:* Moist for short periods in winter and early in spring, dry late in May through October

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to the duripan:* 20 to 30 inches

*Reaction:* Moderately alkaline or strongly alkaline, increasing in alkalinity with increasing depth

*Other characteristics:* Bqk horizon present above the indurated duripan in some pedons

#### A horizon:

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3

#### Bt horizon:

Value—4 to 6 dry, 4 or 5 moist

Chroma—4 to 6

Texture—gravelly clay loam, gravelly silty clay loam, gravelly clay, or gravelly silty clay

Content of clay—35 to 50 percent

Content of rock fragments—15 to 35 percent when mixed, mainly pebbles

Exchangeable sodium percentage—15 to 30

### Kobeh Series

*Depth class:* Very deep

*Drainage class:* Somewhat excessively drained

*Parent material:* Mixed alluvium that includes some volcanic ash

*Positions on landscape:* Inset fans, fan skirts, stream terraces

*Slope:* 0 to 8 percent

*Mean annual precipitation:* About 9 inches

*Mean annual temperature:* About 43 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, frigid Durixerollic Camborthids

#### Typical Pedon

A—0 to 7 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few medium roots and common fine and very fine roots; common fine and very fine interstitial pores; 25 percent pebbles; neutral (pH 7.0); clear smooth boundary.

Bw—7 to 15 inches; pale brown (10YR 6/3) gravelly fine sandy loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few medium roots and common fine and very fine roots; common fine and very fine interstitial pores; 30 percent pebbles; neutral (pH 7.0); clear wavy boundary.

2Bqk—15 to 32 inches; very pale brown (10YR 7/3) very gravelly sandy loam, brown (10YR 5/3) moist; massive; hard, firm, nonsticky and nonplastic; few fine and very fine roots; few fine and very fine interstitial pores; discontinuous, thin, weakly cemented laminae; 20 percent brittle durinodes; 50 percent pebbles; strongly effervescent; strongly alkaline (pH 8.6); clear wavy boundary.

2Bk1—32 to 52 inches; very pale brown (10YR 7/3) very gravelly sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; common fine and very fine roots; common fine and very fine interstitial pores; 45 percent pebbles; strongly effervescent; strongly alkaline (pH 8.6); clear wavy boundary.

3Bk2—52 to 60 inches; light gray (10YR 7/2) gravelly fine sandy loam, brown (10YR 5/3) moist; massive; hard, friable, nonsticky and nonplastic; few medium roots; common fine and very fine interstitial pores; 30 percent pebbles; violently effervescent; strongly alkaline (pH 9.0).

#### Typical Pedon Location

*Soil name and map unit in which located:* Kobeh gravelly loam, 0 to 4 percent slopes, in Kobeh-Shipley association

*Location in Nevada:* Eureka County Area, Nevada, survey area; about 14 miles west of Eureka; about 280 feet south and 660 feet east of the northwest corner of sec. 11, T. 18 N., R. 51 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in June through October

*Average annual soil temperature:* 44 to 47 degrees F  
*Combined thickness of the A and Bw horizons:* 12 to 30 inches

*Depth to the 2Bk horizon:* 20 to 35 inches

**Control section:**

Texture—gravelly sandy loam or gravelly fine sandy loam in the upper part; dominantly very gravelly sand in the lower part, but strata of very gravelly sandy loam common in some pedons  
 Content of clay—5 to 15 percent in the upper part, less than 10 percent in the lower part  
 Content of rock fragments—averages 35 to 60 percent, mainly pebbles

**A horizon:**

Value—5 or 6 dry, 3 or 4 moist (value of more than 5.5 dry and 3.5 moist occurs when the upper 7 inches is mixed)  
 Structure—weak or moderate, very thin to medium, and platy; weak or moderate, very fine to medium, and subangular blocky; single grain; or massive  
 Reaction—slightly acid or neutral

**Bw horizon:**

Value—5 or 6 dry, 3 to 5 moist  
 Chroma—2 or 3  
 Structure—weak, coarse or very coarse, and prismatic; moderate, medium or coarse, and subangular blocky, or massive

**Bq and 2Bk horizons:**

Hue—10YR or 2.5Y  
 Value—6 or 7 dry, 4 or 5 moist  
 Chroma—2 or 3  
 Reaction—neutral to strongly alkaline  
 Other characteristics—20 to 70 percent 0.5- to 1-inch-thick, hard or very hard durinodes in the Bq horizon; few to many silica bridges; discontinuous, weakly or strongly cemented layer that extends 6 to 36 inches horizontally and is as much as 3 inches thick present at the top of the 2Bk horizon in some pedons

**2C or 3Bk horizon (when present):**

Hue—10YR or 2.5Y  
 Value—5 to 7 dry, 3 to 6 moist  
 Chroma—1 to 3  
 Other characteristics—strata of gravelly fine sandy loam or very gravelly fine sandy loam below a depth of 50 inches in some pedons

**Koyen Series**

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Loamy alluvium derived dominantly from volcanic rock

*Positions on landscape:* Fan skirts

*Slope:* 2 to 4 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 52 degrees F

**Taxonomic class:** Coarse-loamy, mixed, mesic Typic Camborthids

**Typical Pedon**

A—0 to 4 inches; light brownish gray (10YR 6/2) fine sandy loam, dark grayish brown (10YR 4/2) moist; weak thin platy structure; soft, very friable, slightly sticky and nonplastic; few fine and medium roots; common fine and medium vesicular pores; 5 percent pebbles; moderately alkaline (pH 8.2); abrupt smooth boundary.

Bw1—4 to 8 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; few very fine roots and common fine and medium roots; common fine and medium tubular pores; 10 percent pebbles; moderately alkaline (pH 8.4); clear smooth boundary.

Bw2—8 to 14 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; common fine and medium roots; common fine and medium tubular pores; few fine filaments or threads of lime; 10 percent pebbles; slightly effervescent; moderately alkaline (pH 8.4); clear smooth boundary.

Bk1—14 to 34 inches; light brownish gray (10YR 6/2) sandy loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; few fine and medium roots; common fine tubular pores; common medium filaments or threads of lime; 10 percent pebbles; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary.

Bk2—34 to 60 inches; light brownish gray (10YR 6/2) gravelly sandy loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; few fine tubular pores; few fine lime filaments or threads and lime coatings on pebbles; 20 percent pebbles; strongly effervescent; strongly alkaline (pH 8.8).

**Typical Pedon Location**

*Map unit in which located:* Koyen fine sandy loam, 2 to 4 percent slopes

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 28 miles southeast of

Austin; about 500 feet south and 1,100 feet west of the northeast corner of sec. 17, T. 15 N., R. 45 E.

#### Range in Characteristics

*Soil moisture content:* Usually dry, but moist in some part for short periods in winter and early in spring and for 10 to 20 days cumulatively between July and October as a result of convection storms

*Average annual soil temperature:* 53 to 59 degrees F

*Depth to the Bk horizon:* 14 to 21 inches

*Reaction:* Moderately alkaline or strongly alkaline (strongly alkaline in the Bk horizon)

*Other characteristics:* 2C horizon present in some pedons

#### Control section:

Texture—dominantly sandy loam, but strata of fine sandy loam, loam, or loamy sand in some pedons

Content of clay—10 to 18 percent

Content of rock fragments—averages 10 to 25 percent, but individual layers are as much as 40 percent pebbles

#### A horizon:

Hue—10YR or 2.5Y

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 to 4

Structure—very thin to medium and platy, very fine to medium and subangular blocky, or massive

#### Bw horizon:

Hue—10YR or 2.5Y

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 to 4

Structure—very weak or weak, coarse or medium, and subangular blocky; or massive

Other characteristics—calcareous only in the lower part

#### Bk horizon:

Value—6 to 8 dry, 4 to 6 moist

Chroma—2 to 4

Effervescence—strongly effervescent or violently effervescent

Structure—subangular blocky or massive

### Koynik Series

*Depth class:* Very shallow or shallow

*Drainage class:* Well drained

*Parent material:* Residuum derived from limestone and calcareous shale

*Positions on landscape:* Hillsides

*Slope:* 15 to 30 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 49 degrees F

**Taxonomic class:** Loamy-skeletal, carbonatic, mesic Lithic Torriorthents

#### Typical Pedon

About 40 percent of the surface is covered with pebbles and 10 percent with cobbles.

A1—0 to 3 inches; very pale brown (10YR 7/3) very gravelly very fine sandy loam, brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and nonplastic; few very fine roots; many very fine vesicular pores; 30 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.

A2—3 to 6 inches; pale brown (10YR 6/3) very gravelly silt loam, brown (10YR 4/3) moist; moderate thin platy structure parting to moderate fine granular; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; many very fine vesicular pores and few very fine tubular pores; 40 percent pebbles; common medium lime pendants on the underside of rock fragments; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

Bk—6 to 8 inches; very pale brown (10YR 7/3) very gravelly loam, brown (10YR 5/3) moist; moderate thin platy structure parting to moderate fine granular; slightly hard, very friable, sticky and plastic; common very fine and fine roots; many very fine and fine interstitial and tubular pores; 40 percent pebbles; common fine soft masses of lime and common medium pendants of lime on the underside of or coating rock fragments; violently effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary.

2R—8 inches; hard limestone.

#### Typical Pedon Location

*Soil name and map unit in which located:* Koynik very gravelly very fine sandy loam, 15 to 30 percent slopes, in Koynik, steep-Koynik-Rock outcrop association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 30 miles southwest of Battle Mountain, in the Fish Creek Mountains; in an unsectionalized area about 1,000 feet north and 3,000 feet west of the southwest corner of the assumed sec. 6, T. 28 N., R. 43 E.

#### Range in Characteristics

*Soil moisture content:* Moist for short periods in winter and early in spring, dry in May through October

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to lithic contact:* 8 to 14 inches



*Reaction:* Moderately alkaline or strongly alkaline

*Calcium carbonate equivalent:* 40 to 60 percent, usually increasing with increasing depth

*Other characteristics:* Thin Cr horizon or 1 to 2 inches of highly fractured bedrock present at the lithic contact

*Control section:*

Texture—very gravelly silt loam, very gravelly loam, or very gravelly very fine sandy loam

Content of clay—15 to 25 percent

Content of rock fragments—35 to 50 percent, mainly pebbles

*A horizon:*

Value—6 or 7 dry, 4 to 6 moist

Chroma—2 to 4

*Bk horizon:*

Hue—10YR or 2.5Y

Value—6 to 8 dry, 4 to 6 moist

Chroma—3 or 4

Structure—weak or moderate and platy or subangular blocky, or massive

## **Kram Series**

*Depth class:* Very shallow or shallow

*Drainage class:* Somewhat excessively drained

*Parent material:* Residuum derived from limestone

*Positions on landscape:* Side slopes of mountains

*Slope:* 30 to 50 percent

*Mean annual precipitation:* About 10 inches

*Mean annual temperature:* About 48 degrees F

**Taxonomic class:** Loamy-skeletal, carbonatic, mesic  
Lithic Xeric Torriorthents

### **Typical Pedon**

About 25 percent of the surface is covered with pebbles, 15 percent with cobbles, and 2 percent with stones.

A—0 to 4 inches; light brownish gray (10YR 6/2) very cobbly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine interstitial pores; 30 percent pebbles and 20 percent cobbles; violently effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

C—4 to 13 inches; pale brown (10YR 6/3) very gravelly very fine sandy loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots and few coarse roots; common very fine interstitial pores; 45 percent pebbles and 10 percent cobbles; violently effervescent;

moderately alkaline (pH 8.4); abrupt irregular boundary.

R—13 inches; fractured limestone.

### **Typical Pedon Location**

*Soil name and map unit in which located:* Kram very cobbly loam in Attella-Xine-Kram association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 46 miles north of Austin; about 2,400 feet south and 1,100 feet west of the northeast corner of sec. 19, T. 25 N., R. 40 E.

### **Range in Characteristics**

*Soil moisture content:* Usually dry in mid-June through October

*Average annual soil temperature:* 49 to 52 degrees F

*Depth to bedrock:* 8 to 14 inches

*Reaction:* Moderately alkaline or strongly alkaline

*Calcium carbonate equivalent (fraction less than 20 millimeters):* 40 to 50 percent

*Control section:*

Content of clay—8 to 18 percent

Content of rock fragments—40 to 50 percent pebbles; averages 5 to 10 percent cobbles and stones

*A horizon:*

Value—4 to 6 dry, 3 or 4 moist

Chroma—2 or 3

Structure—granular or platy

Effervescence—slightly effervescent to violently effervescent

*C horizon:*

Hue—10YR or 2.5Y

Value—6 or 7 dry, 3 or 4 moist

Chroma—2 to 4

Texture—very gravelly very fine sandy loam or very gravelly loam

Content of rock fragments—45 to 55 percent pebbles, 5 to 10 percent cobbles and stones

Structure—subangular blocky or massive

Effervescence—strongly effervescent or violently effervescent

## **Labshaft Series**

*Depth class:* Shallow

*Drainage class:* Well drained

*Parent material:* Residuum derived from siliceous rock

*Positions on landscape:* Side slopes of mountains

*Slope:* 30 to 50 percent

*Mean annual precipitation:* About 14 inches

*Mean annual temperature:* About 43 degrees F

**Taxonomic class:** Loamy-skeletal, mixed Lithic  
Cryoborolls

### Typical Pedon

About 10 percent of the surface is covered with pebbles, 30 percent with cobbles, and 30 percent with stones.

A1—0 to 3 inches; brown (10YR 5/3) extremely stony loam, dark brown (10YR 3/3) moist; moderate fine and medium granular structure; soft, very friable, slightly sticky and nonplastic; many very fine and fine roots; many very fine tubular pores; 15 percent pebbles, 25 percent cobbles, and 20 percent stones; neutral (pH 6.8); clear smooth boundary.

A2—3 to 8 inches; brown (10YR 5/3) very cobbly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; 15 percent pebbles, 25 percent cobbles, and 5 percent stones; neutral (pH 7.0); clear irregular boundary.

Bw—8 to 15 inches; yellowish brown (10YR 5/4) extremely gravelly loam, dark yellowish brown (10YR 3/4) moist; moderate fine angular blocky structure; slightly hard, friable, sticky and plastic; common fine, medium, and coarse roots; common very fine tubular pores; 45 percent pebbles, 10 percent cobbles, and 10 percent stones; neutral (pH 7.2); abrupt irregular boundary.

R—15 inches; fractured siliceous rock; few fine roots in crevices.

### Typical Pedon Location

*Soil name and map unit in which located:* Labshaft extremely stony loam, 30 to 50 percent slopes, in Labshaft-Hapgood-Rock outcrop association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 40 miles southwest of Austin; in an unsectionalized area about 2,000 feet south of the northwest corner of the assumed sec. 9, T. 17 N., R. 38 E.

### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in mid-July to early in October

*Average annual soil temperature:* 43 to 47 degrees F

*Average summer soil temperature:* 54 to 59 degrees F

*Thickness of the mollic epipedon:* 7 to 14 inches  
(commonly includes part or all of the Bw horizon)

*Depth to bedrock:* 10 to 20 inches

*Reaction:* Neutral or slightly acid

### A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3

### B horizon:

Value—5 or 6 dry, 2 or 3 moist

Chroma—2 to 4

Texture—very gravelly loam, very gravelly clay loam, extremely gravelly sandy clay loam, or extremely gravelly loam

Content of clay—25 to 35 percent

Content of rock fragments—40 to 70 percent, mostly pebbles

## Laped Series

*Depth class:* Shallow to duripan

*Drainage class:* Well drained

*Parent material:* Residuum and colluvium derived from rhyolitic tuff and andesite

*Positions on landscape:* Crests, shoulder slopes, and side slopes of hills

*Slope:* 8 to 30 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 49 degrees F

**Taxonomic class:** Loamy, mixed, mesic, shallow Typic Durargids

### Typical Pedon

About 30 percent of the surface is covered with pebbles.

A1—0 to 3 inches; light gray (10YR 7/2) gravelly loam, brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine and fine vesicular pores; 20 percent pebbles; moderately alkaline (pH 8.2); abrupt smooth boundary.

A2—3 to 6 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate very thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium roots; many very fine and fine vesicular pores; 5 percent pebbles; moderately alkaline (pH 8.2); clear smooth boundary.

Bt—6 to 12 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 3/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common medium roots; common very fine and fine tubular pores; few thin clay films on peds and bridging sand grains; 10 percent pebbles and 5

percent cobbles; moderately alkaline (pH 8.2); clear smooth boundary.

**Btk**—12 to 18 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 3/4) moist; moderate fine prismatic structure parting to strong fine angular blocky; hard, firm, sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores; 15 percent pebbles and 5 percent cobbles; few fine strongly effervescent lime filaments and thin strongly effervescent lime coatings on the underside of coarse fragments; noneffervescent in matrix; moderately alkaline (pH 8.3); abrupt wavy boundary.

**Bqkm**—18 to 23 inches; white (10YR 8/2), indurated duripan that has a laminar cap 2 millimeters thick; pale brown (10YR 6/3) moist; massive; extremely hard, extremely firm; violently effervescent; clear wavy boundary.

**2R**—23 inches; hard bedrock.

#### Typical Pedon Location

*Soil name and map unit in which located:* Laped gravelly loam, 8 to 15 percent slopes, in Laped-Colbar-Osoll association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 52 miles southwest of Battle Mountain; about 1,800 feet south and 400 feet west of the northeast corner of sec. 22, T. 24 N., R. 40 E.

#### Range in Characteristics

*Soil moisture content:* Moist for short periods in winter and early in spring, dry in May through October

*Average annual soil temperature:* 47 to 51 degrees F

*Thickness of the solum and depth to the duripan:* 14 to 20 inches

*Depth to bedrock:* 20 to 30 inches

*Other characteristics:* Thin Bqk horizon above the duripan in some pedons

#### Control section:

Content of clay—27 to 35 percent

Content of rock fragments—15 to 35 percent, mainly pebbles

#### A horizon:

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 to 4

#### Bt horizon:

Hue—7.5YR or 10YR

Value—5 or 6 dry, 3 to 5 moist

Chroma—4 to 6

Reaction—dominantly moderately alkaline, but strongly alkaline in the lower part in some pedons

Sodium adsorption ratio—2 to 10, generally increasing in concentration with increasing depth

Effervescence—noneffervescent or slightly effervescent in the matrix in the lower part

Other characteristics—filaments or coatings of lime common in most pedons

### Laxal Series

*Depth class:* Very deep

*Drainage class:* Somewhat excessively drained

*Parent material:* Alluvium derived from shale and volcanic rock

*Positions on landscape:* Inset fans, fan skirts

*Slope:* 0 to 4 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 52 degrees F

*Taxonomic class:* Loamy-skeletal, mixed (calcareous), mesic Durorthidic Torriorthents

#### Typical Pedon

**A1**—0 to 3 inches; very pale brown (10YR 7/3) gravelly fine sandy loam, brown (10YR 4/3) moist; moderate fine and medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; many very fine and fine vesicular pores; 20 percent pebbles; strongly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary.

**A2**—3 to 6 inches; light gray (10YR 7/2) gravelly fine sandy loam, dark brown (10YR 3/3) moist; strong fine and medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; many very fine and fine vesicular pores and common very fine tubular pores; 20 percent pebbles; strongly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary.

**Bqk1**—6 to 12 inches; light brownish gray (2.5Y 6/2) very gravelly loam, dark grayish brown (2.5Y 4/2) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; few very fine tubular pores; white (2.5Y 8/2) lime coatings and olive yellow (2.5Y 6/8) silica coatings 0.5 to 2.0 millimeters thick on the underside of pebbles; common firm coarse durinodes; 45 percent discontinuous weak silica and lime cementation bridging pebbles; 40 percent pebbles; violently effervescent; strongly alkaline (pH 8.8); gradual wavy boundary.

**Bqk2**—12 to 17 inches; light brownish gray (2.5Y 6/2)

very gravelly sandy loam, dark grayish brown (2.5Y 4/2) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine, common fine, and few medium roots; common very fine and fine tubular pores; white (2.5Y 8/2) lime coatings and olive yellow (2.5Y 6/8) silica coatings 0.5 to 2.0 millimeters thick on the underside of pebbles; 50 percent pebbles; violently effervescent; strongly alkaline (pH 8.8); gradual wavy boundary.

Bqk3—17 to 23 inches; light brownish gray (2.5Y 6/2) very gravelly sandy loam, very dark grayish brown (2.5Y 3/2) moist; single grain; loose, nonsticky and nonplastic; many very fine and common fine roots; white (2.5Y 8/2) lime coatings and olive yellow (2.5Y 6/8) silica coatings 0.5 to 1.0 millimeter thick on the underside of pebbles; 60 percent pebbles; violently effervescent; strongly alkaline (pH 8.8); gradual wavy boundary.

Bqk4—23 to 31 inches; light olive gray (2.5Y 6/2) very gravelly loamy coarse sand, dark olive gray (2.5Y 3/2) moist; single grain; loose, nonsticky and nonplastic; common very fine and fine roots; light gray (10YR 7/2) lime coatings and very pale brown (10YR 7/4) silica coatings 0.5 to 1.0 millimeter thick on the underside of pebbles; 60 percent pebbles; violently effervescent; strongly alkaline (pH 9.0); gradual wavy boundary.

Bqk5—31 to 60 inches; light olive gray (2.5Y 6/2) extremely gravelly loamy sand, dark olive gray (2.5Y 3/2) moist; single grain; loose, nonsticky and nonplastic; common very fine and fine roots; olive gray (10YR 7/2) lime coatings and very pale brown (10YR 7/4) silica coatings less than 1 millimeter thick on the underside of pebbles; 55 percent discontinuous weak silica cementation bridging pebbles; 65 percent pebbles and 5 percent cobbles; violently effervescent; strongly alkaline (pH 9.0).

#### Typical Pedon Location

*Soil name and map unit in which located:* Laxal gravelly fine sandy loam, 2 to 4 percent slopes, in Laxal association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 19 miles southeast of Austin, in the Big Smoky Valley; about 1,600 feet east and 550 feet north of the southwest corner of sec. 28, T. 16 N., R. 44 E.

#### Range in Characteristics

*Soil moisture content:* Usually dry, but moist in some part for short periods in winter and early in spring and for 10 to 20 days cumulatively between July and October as a result of convection storms

*Average annual soil temperature:* 53 to 59 degrees F

*Reaction:* Strongly alkaline or very strongly alkaline

*Effervescence:* Strongly effervescent or violently effervescent

*Other characteristics:* Buried very gravelly clay loam Bt horizon or gravel layers present below a depth of 40 inches in some pedons

#### Control section:

Texture—dominantly stratified very gravelly fine sandy loam, sandy loam, coarse sandy loam, and loamy coarse sand and common thin strata of sand and clay loam; fine sandy loam, sandy loam, or coarse sandy loam when mixed  
Content of rock fragments—averages 35 to 60 percent, mainly pebbles

#### A horizon:

Hue—10YR or 2.5Y

Value—6 or 7 dry, 3 to 5 moist

Chroma—2 or 3 dry, 2 to 4 moist

Structure—platy or massive

#### Bqk horizon:

Hue—10YR or 2.5Y

Value—6 or 7 dry, 3 to 5 moist

Chroma—2 or 3 dry, 2 to 4 moist

Other characteristics—discontinuous, weak, silica cementation bridging rock fragments at a depth of less than 40 inches in some pedons; lime and silica coatings and pendants common on the underside of rock fragments

### Layview Series

*Depth class:* Shallow

*Drainage class:* Well drained

*Parent material:* Residuum derived from andesite, rhyolite, and tuff

*Positions on landscape:* Crests and shoulder slopes of mountains

*Slope:* 4 to 15 percent

*Mean annual precipitation:* About 14 inches

*Mean annual temperature:* About 42 degrees F

**Taxonomic class:** Loamy-skeletal, mixed Argic Lithic Cryoborolls

#### Typical Pedon

About 50 percent of the surface is covered with pebbles and 25 percent with cobbles and stones.

A—0 to 3 inches; brown (10YR 5/3) very gravelly sandy loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine

roots; many very fine vesicular pores; 35 percent pebbles; neutral (pH 7.2); abrupt smooth boundary.

Bt1—3 to 7 inches; brown (10YR 5/3) very gravelly clay loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure parting to moderate fine granular structure; slightly hard, very friable, sticky and plastic; common very fine and fine roots; common very fine tubular pores; 35 percent pebbles; neutral (pH 7.2); clear wavy boundary.

Bt2—7 to 12 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; hard, friable, sticky and plastic; few fine and common medium roots; few very fine tubular pores; 40 percent pebbles and 10 percent cobbles; neutral (pH 7.2); abrupt irregular boundary.

2R—12 inches; fractured tuff.

#### Typical Pedon Location

*Soil name and map unit in which located:* Layview very gravelly sandy loam, 8 to 15 percent slopes, in Packer-Layview-Hapgood association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 41 miles southwest of Austin; about 1,700 feet west and 1,100 feet south of the northeast corner of sec. 1, R. 33 E., T. 16 N.

#### Range in Characteristics

*Soil moisture content:* Usually dry in summer and fall, moist in mid-October to mid-July

*Average annual soil temperature:* 43 to 47 degrees F

*Average summer soil temperature:* 50 to 59 degrees F

*Thickness of the mollic epipedon:* 7 to 12 inches

*Depth to bedrock:* 10 to 14 inches

*Reaction:* Neutral or mildly alkaline

#### Control section:

Content of clay—18 to 30 percent

Content of rock fragments—35 to 60 percent, mainly pebbles

#### A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3

Other characteristics—weak or moderate structure

#### Bt horizon:

Value—4 or 5 dry, 3 or 4 moist

Chroma—2 to 4

Texture—very gravelly loam or very gravelly clay loam

Content of clay—22 to 35 percent

Structure—weak or moderate and subangular or angular blocky

Content of rock fragments—35 to 60 percent, mainly pebbles

### Locane Series

*Depth class:* Shallow

*Drainage class:* Well drained

*Parent material:* Residuum derived from shale and tuffaceous or siliceous conglomerate

*Positions on landscape:* Side slopes of mountains

*Slope:* 2 to 50 percent

*Mean annual precipitation:* About 12 inches

*Mean annual temperature:* About 45 degrees F

**Taxonomic class:** Clayey-skeletal, montmorillonitic, frigid Lithic Xerollic Haplargids

#### Typical Pedon

About 40 percent of the surface is covered with pebbles and 10 percent with cobbles.

A1—0 to 4 inches; very pale brown (10YR 7/3) gravelly loam, dark brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine vesicular pores; 30 percent pebbles; neutral (pH 7.2); abrupt smooth boundary.

A2—4 to 6 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; 25 percent pebbles; neutral (pH 7.2); clear smooth boundary.

Bt1—6 to 9 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; few fine and medium roots; common very fine tubular pores; many thin and few moderately thick clay films on faces of peds; 35 percent pebbles and 5 percent cobbles; neutral (pH 7.2); clear wavy boundary.

Bt2—9 to 14 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 3/4) moist; strong medium angular blocky structure; hard, friable, very sticky and very plastic; few fine and medium roots; few very fine tubular pores; many thin and moderately thick clay films on faces of peds; 45 percent pebbles and 10 percent cobbles; neutral (pH 7.0); abrupt irregular boundary.

R—14 inches; hard, slightly fractured, tuffaceous conglomerate.

#### Typical Pedon Location

*Soil name and map unit in which located:* Locane gravelly loam, 8 to 15 percent slopes, in Locane-Coztur-Punchbowl association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 30 miles west of Austin; in an unsectionalized area about 700 feet south and 2,000 feet east of the northwest corner of the assumed sec. 26, T. 18 N., R. 38 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry late in June through October

*Average annual soil temperature:* 44 to 47 degrees F

*Depth to bedrock:* 10 to 20 inches

*Reaction:* Slightly acid or neutral

#### A horizon:

Value—6 or 7 dry, 3 or 4 moist

Chroma—2 or 3

Structure—granular, platy, or subangular blocky

Consistence—slightly hard or hard (dry)

#### Bt horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 3 or 4 moist

Chroma—2 to 4

Structure—weak to strong and angular blocky or subangular blocky, or massive

Thickness—7 to 15 inches

Content of clay—35 to 50 percent

Content of rock fragments—averages 35 to 50 percent

### Loncan Series

*Depth class:* Moderately deep

*Drainage class:* Well drained

*Parent material:* Residuum and colluvium derived mainly from chert or sedimentary and volcanic rock

*Positions on landscape:* Side slopes of mountains

*Slope:* 15 to 50 percent

*Mean annual precipitation:* About 14 inches

*Mean annual temperature:* About 42 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, frigid Aridic Haploxerolls

#### Typical Pedon

About 30 percent of the surface is covered with pebbles and 5 percent with cobbles.

A1—0 to 4 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate very fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine interstitial pores; 25 percent pebbles and 5 percent cobbles; neutral (pH 6.8); clear smooth boundary.

A2—4 to 9 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate very fine

granular structure; soft, very friable, sticky and plastic; common very fine roots; common very fine tubular pores; 30 percent pebbles; neutral (pH 6.8); clear smooth boundary.

A3—9 to 16 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; weak very fine granular structure; soft, very friable, sticky and plastic; common medium and coarse roots; common very fine interstitial pores; 45 percent pebbles and 5 percent cobbles; neutral (pH 7.0); clear wavy boundary.

C—16 to 22 inches; pale brown (10YR 6/3) extremely gravelly loam, dark brown (10YR 4/3) moist; massive; soft, very friable, sticky and plastic; few fine roots; few very fine interstitial pores; 65 percent pebbles and 5 percent cobbles; neutral (pH 7.0); abrupt wavy boundary.

2R—22 inches; chert.

#### Typical Pedon Location

*Soil name and map unit in which located:* Loncan gravelly loam, 15 to 50 percent slopes, in Loncan-Gando-Glean association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 55 miles south of Beowawe; about 1,100 feet south and 2,000 feet east of the northwest corner of sec. 5, T. 22 N., R. 48 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry late in June to mid-October

*Average annual soil temperature:* 42 to 47 degrees F

*Thickness of the mollic epipedon:* 10 to 17 inches

*Depth to bedrock:* 21 to 38 inches

*Other characteristics:* AC horizon present in some pedons

#### Control section:

Texture—very gravelly loam, extremely cobbly loam, very gravelly sandy clay loam, or extremely gravelly loam

Content of clay—18 to 27 percent

Content of rock fragments—averages 50 to 70 percent pebbles and cobbles and very few stones

#### A horizon:

Value—4 or 5 dry

Chroma—2 or 3

Structure—platy, subangular blocky, or granular

#### C horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3

Content of rock fragments—40 to 70 percent pebbles and cobbles

## Lopwash Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Alluvium derived from various kinds of rock and loess

*Positions on landscape:* Inset fans

*Slope:* 0 to 4 percent

*Mean annual precipitation:* About 10 inches

*Mean annual temperature:* About 45 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, frigid Typic Camborthids

### Typical Pedon

- A—0 to 6 inches; light gray (10YR 7/2) loam, grayish brown (10YR 5/2) moist; weak medium platy structure; slightly hard, friable, nonsticky and nonplastic; few fine and medium roots; common very fine roots and few fine and medium vesicular pores; 10 percent pebbles; moderately alkaline (pH 8.2); abrupt smooth boundary.
- Bw—6 to 12 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine roots and few medium and very fine roots; common very fine and fine tubular pores and few fine vesicular pores; 10 percent pebbles; moderately alkaline (pH 8.2); clear smooth boundary.
- C—12 to 19 inches; light brownish gray (10YR 6/2) very gravelly sandy loam, dark grayish brown (10YR 4/2) moist; massive; soft, very friable, slightly sticky and slightly plastic; few medium roots and common very fine and fine roots; common very fine and fine interstitial pores and few fine and medium tubular pores; 40 percent pebbles; lime coatings on the underside of pebbles; moderately alkaline (pH 8.4); clear smooth boundary.
- Ck—19 to 60 inches; light brownish gray (10YR 6/2) very gravelly sandy loam, dark grayish brown (10YR 4/2) moist; massive; soft, very friable, nonsticky and nonplastic; few fine and medium roots; common very fine and fine interstitial pores and few fine and medium tubular pores; 40 percent pebbles; lime coatings on the underside of pebbles; slightly effervescent; strongly alkaline (pH 8.8).

### Typical Pedon Location

*Soil name and map unit in which located:* Lopwash loam, 0 to 4 percent slopes, in Poorcal-Lopwash association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 19 miles east of Austin;

about 1,500 feet south and 500 feet west of the northeast corner of sec. 20, T. 19 N., R. 48 E.

### Range in Characteristics

*Soil moisture content:* Moist in winter and early in spring, dry late in May to early in November

*Average annual soil temperature:* 45 to 47 degrees F

*Combined thickness of the A and Bw horizons:* 10 to 16 inches

*Depth to carbonates:* 14 to 20 inches

*Control section:*

Content of clay—5 to 18 percent

Content of rock fragments—35 to 70 percent when mixed

*A horizon:*

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3

Reaction—moderately alkaline or strongly alkaline

*Bw horizon:*

Value—5 or 6 dry, 4 or 5 moist

Chroma—3 or 4 moist

Texture—sandy loam, gravelly sandy loam, loam, or gravelly loam

Reaction—moderately alkaline or strongly alkaline

*C horizon:*

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 to 6

Texture (fraction less than 2 millimeters)—dominantly sandy loam, but loamy sand or sand in the lower part in some pedons

Content of rock fragments—35 to 70 percent, mostly pebbles

Reaction—moderately alkaline or strongly alkaline

## McConnel Series

*Depth class:* Very deep

*Drainage class:* Somewhat excessively drained

*Parent material:* Alluvium that is derived from various kinds of rock and includes some loess and volcanic ash over lacustrine beach sediment or gravelly alluvium

*Positions on landscape:* Inset fans, beach terraces, fan skirts, offshore bars

*Slope:* 0 to 8 percent

*Mean annual precipitation:* About 8 inches

*Mean annual temperature:* About 50 degrees F

**Taxonomic class:** Sandy-skeletal, mixed, mesic Xerollic Camborthids

### Typical Pedon

About 20 percent of the surface is covered with pebbles.

- A1—0 to 2 inches; grayish brown (10YR 5/2) loam, dark grayish brown (10YR 4/2) moist; weak medium platy structure parting to weak very fine granular; soft, very friable, nonsticky and nonplastic; many fine and common medium roots; common very fine tubular pores; 10 percent pebbles; neutral (pH 7.2); abrupt smooth boundary.
- A2—2 to 6 inches; light brownish gray (10YR 6/2) sandy loam, dark grayish brown (10YR 4/2) moist; weak thick platy structure parting to weak very fine granular; slightly hard, friable, slightly sticky and nonplastic; many fine and common medium roots; common very fine tubular pores; 5 percent pebbles; mildly alkaline (pH 7.6); clear smooth boundary.
- Bw—6 to 12 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine roots; common very fine tubular pores; 10 percent pebbles; mildly alkaline (pH 7.8); clear wavy boundary.
- 2Bk1—12 to 19 inches; pale brown (10YR 6/3) very gravelly loamy sand, brown (10YR 5/3) moist; massive; soft, very friable, nonsticky and nonplastic; common fine and medium roots; few very fine tubular pores; 55 percent pebbles; thin lime coatings on the underside of pebbles; slightly effervescent; moderately alkaline (pH 8.2); gradual wavy boundary.
- 3Bk2—19 to 28 inches; light brownish gray (10YR 6/2) extremely gravelly loamy coarse sand, grayish brown (10YR 5/2) moist; single grain; nonsticky and nonplastic; common fine and medium roots; many fine interstitial pores; 65 percent pebbles; thin lime coatings on the underside of pebbles; strongly effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.
- 3Bk3—28 to 60 inches; pale brown (10YR 6/3) extremely gravelly coarse sand, brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; few fine and medium roots; many fine interstitial pores; 70 percent pebbles; few thin lime coatings on the underside of pebbles; strongly effervescent; strongly alkaline (pH 8.8).

#### Typical Pedon Location

*Soil name and map unit in which located:* McConnel loam, 0 to 4 percent slopes, in Tulase-Bubus-McConnel association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 38 miles southeast of Battle Mountain; about 1,500 feet north of the southeast corner of sec. 30, T. 26 N., R. 48 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in June through October

*Average annual soil temperature:* 50 to 54 degrees F

*Depth to the 2Bk horizon:* 10 to 20 inches

#### Control section:

Content of clay—averages as much as 5 percent

Content of rock fragments—averages 50 to 80 percent, mainly pebbles, but is as much as 70 percent in the upper part and 60 to 85 percent in the lower part

Texture—stratified very fine sandy loam to extremely gravelly sandy loam or sandy loam in the upper part; stratified very gravelly loamy sand to extremely gravelly coarse sand in the lower part

#### A horizon:

Hue—10YR or 2.5Y

Value—5 or 6 dry and 3 or 4 moist (5 dry and 3 moist occur only in the upper 3 inches)

Chroma—1 to 3

Structure—weak or moderate, thin to thick, and platy; weak or moderate, fine or medium, and granular; or massive

Reaction—neutral to moderately alkaline

#### Bw horizon:

Hue—10YR or 2.5Y

Value—5 to 7 dry, 3 to 5 moist

Chroma—dominantly 2 to 4, but 1 when dark sand grains are present

Texture—loam, sandy loam, or fine sandy loam

Structure—very fine to medium and granular or subangular blocky, or massive

Reaction—neutral to moderately alkaline

#### 2Bk, 3Bk, and 3C horizons:

Hue—10YR or 2.5Y

Value—5 to 7 dry, 3 to 5 moist

Chroma—dominantly 2 to 4, but 1 when dark sand grains are present

Reaction—moderately alkaline to very strongly alkaline

#### McVegas Series

*Depth class:* Shallow to duripan

*Drainage class:* Well drained

*Parent material:* Residuum derived from metavolcanic and volcanic rock

*Positions on landscape:* Hills

*Slope:* 8 to 30 percent

*Mean annual precipitation:* About 7 inches



*Mean annual temperature:* About 49 degrees F

**Taxonomic class:** Clayey-skeletal, montmorillonitic, mesic, shallow Haplic Nadurargids

### Typical Pedon

About 10 percent of the surface is covered with pebbles and 30 percent with cobbles.

A1—0 to 2 inches; light brownish gray (10YR 6/2) very cobbly loam, dark grayish brown (10YR 4/2) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; few medium roots; many fine vesicular pores; 30 percent cobbles and 20 percent pebbles; moderately alkaline (pH 8.4); abrupt smooth boundary.

A2—2 to 5 inches; light brownish gray (10YR 6/2) cobbly loam, brown (10YR 4/3) moist; weak thin platy structure; slightly hard, very friable, nonsticky and slightly plastic; few medium roots; many very fine tubular pores; 15 percent pebbles and 15 percent cobbles; moderately alkaline (pH 8.4); abrupt smooth boundary.

Btn—5 to 10 inches; brown (10YR 5/3) very cobbly silty clay, dark brown (10YR 3/3; 10YR 4/3, crushed) moist; weak medium prismatic structure parting to strong fine and medium angular blocky; very hard, very firm, very sticky and very plastic; few medium roots; common fine tubular pores; continuous thick clay films on peds; 25 percent pebbles and 15 percent cobbles; strongly alkaline (pH 8.8); clear wavy boundary.

Btk—10 to 19 inches; light yellowish brown (10YR 6/4) very cobbly silty clay, dark yellowish brown (10YR 3/4; 10YR 4/4, crushed) moist; moderate fine angular blocky structure; very hard, very firm, very sticky and very plastic; few medium roots; common very fine tubular pores; continuous thick clay films on peds; 25 percent pebbles and 20 percent cobbles; common medium lime filaments and threads; strongly effervescent; strongly alkaline (pH 9.0); abrupt irregular boundary.

Bqkm—19 to 22 inches; very pale brown (10YR 7/4), strongly cemented duripan capping bedrock and extending into cracks in the bedrock; some discontinuous indurated laminar deposits; 50 percent pebbles and 30 percent cobbles; strongly effervescent; abrupt smooth boundary.

R—22 inches; rhyolite.

### Typical Pedon Location

*Soil name and map unit in which located:* McVegas very cobbly loam, 15 to 30 percent slopes, in McVegas-Stingdorn-Colbar association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 30 miles northwest of Austin; in

an unsectionalized area about 1,200 feet south and 1,100 feet west of the northeast corner of the assumed sec. 30, T. 24 N., R. 42 E.

### Range in Characteristics

*Soil moisture content:* Usually dry, but moist in some part for short periods from October through May

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to strongly cemented duripan:* 14 to 20 inches

*Depth to bedrock:* 15 to 35 inches

#### Control section:

Content of clay—35 to 45 percent

Content of rock fragments—35 to 60 percent, mainly cobbles

Reaction—moderately alkaline to very strongly alkaline, generally increasing in alkalinity with increasing depth

#### A horizon:

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3

Structure—weak to moderate, thin or medium, and platy

#### Btn horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4

Texture—very cobbly silty clay, very cobbly clay, very cobbly silty clay loam, or very cobbly clay loam

Structure—weak to strong, fine to medium, and prismatic

Consistence—hard to very hard (dry), friable to very firm (moist)

#### Btk horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—4 to 6

Texture—very cobbly silty clay, very cobbly clay, very cobbly silty clay loam, or very cobbly clay loam

Structure—moderate or strong, fine or medium, and angular blocky or prismatic

Consistence—hard or very hard (dry), friable to very firm (moist)

### Minat Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Colluvium that is derived from chert, shale, and mixed volcanic rock and includes some volcanic ash

*Positions on landscape:* Side slopes of hills and mountains

*Slope:* 30 to 50 percent

*Mean annual precipitation:* About 9 inches

*Mean annual temperature:* About 47 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, mesic  
Xerollic Camborthids

### Typical Pedon

About 45 percent of the surface is covered with pebbles and 25 percent with cobbles.

A1—0 to 3 inches; pale brown (10YR 6/3) very cobbly sandy loam, brown (10YR 4/3) moist; weak medium platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; common fine tubular pores; 30 percent pebbles and 20 percent cobbles; moderately alkaline (pH 7.8); gradual smooth boundary.

A2—3 to 9 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; weak medium platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common fine tubular pores; 35 percent pebbles; moderately alkaline (pH 8.0); gradual wavy boundary.

Bw1—9 to 19 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots and few fine and medium roots; common fine tubular pores; 50 percent pebbles; moderately alkaline (pH 8.0); gradual wavy boundary.

Bw2—19 to 27 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine roots and few fine and medium roots; few fine tubular pores; 40 percent pebbles; effervescent in spots; lime coatings on the underside of pebbles; moderately alkaline (pH 8.4); gradual wavy boundary.

Bqk1—27 to 44 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, sticky and plastic; common very fine roots and few fine and medium roots; 50 percent pebbles; 15 percent weakly cemented durinodes; lime coatings on pebbles; strongly effervescent; strongly alkaline (pH 8.6); gradual wavy boundary.

Bqk2—44 to 60 inches; very pale brown (10YR 7/3) very gravelly fine sandy loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; many very fine roots; 50 percent pebbles; 15 percent weakly cemented

durinodes; common medium soft lime masses and lime coatings on pebbles; strongly effervescent; strongly alkaline (pH 8.6).

### Typical Pedon Location

*Soil name and map unit in which located:* Minat very cobbly sandy loam, 30 to 50 percent slopes, in Minat-Bojo-Stingdorn association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 32 miles south of Battle Mountain; in an unsectionalized area about 2,600 feet south and 1,500 feet east of the northwest corner of the assumed sec. 6, T. 24 N., R. 42 E.

### Range in Characteristics

*Soil moisture content:* Usually dry, but moist in winter and spring

*Average annual soil temperature:* 47 to 50 degrees F

*Combined thickness of the A and Bw horizons:* 20 to 30 inches

*Depth to carbonates:* 18 to 27 inches

*Control section:*

Content of clay—15 to 27 percent

Content of rock fragments—35 to 60 percent, mainly pebbles

*A horizon:*

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3

Reaction—mildly alkaline or moderately alkaline

Other characteristics—carbonate recharge in the A1 horizon in some pedons

*Bw horizon:*

Value—6 or 7 dry, 4 or 5 moist

Chroma—3 or 4

Reaction—mildly alkaline or moderately alkaline

*Bqk horizon:*

Value—6 or 7 dry, 4 to 6 moist

Chroma—3 or 4

Other characteristics—as much as 15 percent weakly cemented durinodes

Reaction—moderately alkaline or strongly alkaline

### Misad Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Alluvium or lakeshore sediment that is derived from various kinds of rock and includes some loess and volcanic ash

*Positions on landscape:* Fan skirts, inset fans, offshore bars

*Slope:* 0 to 4 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 48 degrees F

**Taxonomic class:** Loamy-skeletal, mixed (calcareous),  
mesic Durorthidic Torriorthents

### Typical Pedon

A1—0 to 3 inches; pale brown (10YR 6/3) gravelly sandy loam, dark brown (10YR 3/3) moist; moderate thin and medium platy structure; slightly hard, very friable, nonsticky and slightly plastic; few very fine roots; many very fine vesicular and tubular pores; 20 percent pebbles; slightly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary.

A2—3 to 7 inches; pale brown (10YR 6/3) gravelly sandy loam, brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine and fine roots; many very fine vesicular and tubular pores; 30 percent pebbles; slightly effervescent; strongly alkaline (pH 9.0); clear wavy boundary.

Bq—7 to 14 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; common fine distinct relict iron mottles that are brown (7.5YR 5/4 and 4/4) moist; massive; slightly hard, very friable, nonsticky and slightly plastic; common very fine roots and few fine and medium roots; many very fine tubular pores; 10 percent pebbles; 15 percent weakly cemented durinodes 5 to 15 millimeters in diameter; strongly effervescent; strongly alkaline (pH 9.0); clear smooth boundary.

Bqk1—14 to 26 inches; pale brown (10YR 6/3) gravelly fine sandy loam, brown (10YR 4/3) moist; common fine distinct relict iron mottles that are brown (7.5YR 5/4 and 4/2) moist; massive; slightly hard, very friable, nonsticky and slightly plastic; very few very fine and fine roots; common very fine tubular pores; 25 percent pebbles; 35 percent weakly cemented or strongly cemented durinodes 5 to 30 millimeters in diameter; violently effervescent; strongly alkaline (pH 8.8); clear smooth boundary.

Bqk2—26 to 31 inches; pale brown (10YR 6/3) very gravelly fine sandy loam, dark yellowish brown (10YR 4/4) moist; few fine distinct relict iron mottles that are brown (7.5YR 5/4 and 4/2) moist; massive; slightly hard, very friable, nonsticky and slightly plastic; very few very fine roots; many very fine tubular pores; 45 percent pebbles; 10 percent weakly cemented durinodes 5 to 15 millimeters in diameter; violently effervescent; strongly alkaline (pH 9.0); clear wavy boundary.

2C—31 to 43 inches; pale brown (10YR 6/3) very gravelly loamy coarse sand, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and

nonplastic; very few very fine roots; many very fine interstitial and tubular pores; 55 percent pebbles; strongly alkaline (pH 9.0); clear wavy boundary.

2Cq—43 to 60 inches; variegated extremely gravelly coarse sand; single grain; loose, nonsticky and nonplastic; very few fine roots; 75 percent pebbles; few horizontal discontinuous strongly silica-cemented lenses 2 to 3 inches thick; moderately alkaline (pH 8.4).

### Typical Pedon Location

*Map unit in which located:* Misad gravelly sandy loam, strongly saline-sodic

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 2.6 miles southeast of Battle Mountain; in an unsectionalized area about 2,500 feet east and 1,000 feet south of the northwest corner of the assumed sec. 27, T. 32 N., R. 45 E.

### Range in Characteristics

*Soil moisture content:* Moist in winter and early in spring, dry in summer and fall

*Average annual soil temperature:* 47 to 51 degrees F

*Depth to the Bqk horizon:* 8 to 25 inches

*Depth to the unconformable 2C horizon:* 20 to 35 inches

*Other characteristics:* Commonly calcareous, commonly noneffervescent in the upper part or the lower part, common relict iron mottles below a depth of 7 inches

### Control section:

Texture—stratified sandy loam, fine sandy loam, very fine sandy loam, loamy coarse sand, and loamy sand

Content of rock fragments—35 to 50 percent, mainly pebbles

### A horizon:

Hue—2.5Y or 10YR

Value—6 or 7 dry, 3 to 5 moist

Chroma—2 or 3

### B horizon:

Hue—10YR or 7.5YR

Value—5 or 6 dry, 4 or 5 moist

Chroma—2 to 4

Other characteristics—10 to 40 percent weakly cemented to strongly cemented durinodes in the Bq horizon

### 2C horizon:

Texture—stratified loamy sand, sand, and loamy coarse sand

Content of rock fragments—50 to 70 percent, mainly pebbles

Effervescence—noneffervescent to strongly effervescent

Other characteristics—common discontinuous, weakly or strongly silica-cemented lenses between pebbles

## **Muni Series**

*Depth class:* Shallow to duripan

*Drainage class:* Well drained

*Parent material:* Mixed alluvium that is derived from volcanic rock and siliceous sedimentary rock and includes some loess and volcanic ash

*Positions on landscape:* Fan piedmont remnants

*Slope:* 2 to 8 percent

*Mean annual precipitation:* About 10 inches

*Mean annual temperature:* About 45 degrees F

**Taxonomic class:** Loamy, mixed, mesic, shallow Haploxerollic Durargids

### **Typical Pedon**

About 50 percent of the surface is covered with pebbles.

A—0 to 3 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; moderate very thick platy structure; soft, very friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine and fine vesicular pores; neutral (pH 7.2); clear wavy boundary.

AB—3 to 8 inches; light yellowish brown (10YR 6/4) sandy clay loam, yellowish brown (10YR 5/4) moist; moderate thick platy structure parting to weak medium subangular blocky; soft, very friable, sticky and slightly plastic; common very fine and fine roots; few medium and many very fine and fine vesicular pores; neutral (pH 7.2); clear wavy boundary.

Bt1—8 to 13 inches; very pale brown (10YR 7/4) sandy clay loam, yellowish brown (10YR 5/4) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, sticky and slightly plastic; few very fine and fine roots; many thin clay films on peds and in pores; mildly alkaline (pH 7/6); clear wavy boundary.

Bt2—13 to 18 inches; yellow (10YR 7/6) clay loam, yellowish brown (10YR 5/6) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, firm, sticky and plastic; few fine roots; many moderately thick clay films on peds and in pores; 10 percent pebbles; mildly alkaline (pH 7.8); clear wavy boundary.

Bqkm—18 to 28 inches; very pale brown (10YR 8/4), strongly silica-cemented duripan, light yellowish

brown (10YR 6/4) moist; massive; very hard, very firm; brittle; violently effervescent; moderately alkaline (pH 8/2); clear wavy boundary.

Cqk—28 to 32 inches; very pale brown (10YR 7/4) gravelly loam, light yellowish brown (10YR 6/4) moist; massive; hard, friable, slightly sticky and slightly plastic; 20 percent pebbles; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Cqkm—32 to 49 inches; very pale brown (10YR 8/3), strongly silica-cemented duripan, light yellowish brown (10YR 6/4) moist; massive; very hard, very firm; brittle; silica-cemented fragments in the upper part; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

2Ck—49 to 60 inches; very pale brown (10YR 7/3) very gravelly loamy sand, light yellowish brown (10YR 6/4) moist; single grain; loose, nonsticky and nonplastic; 45 percent pebbles; violently effervescent; strongly alkaline (pH 8.6).

### **Typical Pedon Location**

*Soil name and map unit in which located:* Muni fine sandy loam, 2 to 8 percent slopes, in Muni-Orovada-Unius association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 32 miles east of Austin, in the Monitor Valley; in an unsectionalized area about 0.4 mile west and 0.2 mile north of the southeast corner of the assumed sec. 29, T. 18 N., R. 47 E.

### **Range in Characteristics**

*Soil moisture content:* Moist in some part from mid-October through June; dry in July to early in October

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to the strongly cemented duripan:* 14 to 20 inches

*Control section (when mixed):*

Content of clay—18 to 35 percent

Content of rock fragments—0 to 15 percent pebbles

*A horizon:*

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3

*Bt horizon:*

Value—5 to 7 dry, 4 or 5 moist

Chroma—4 to 6

Texture—loam, clay loam, or sandy clay loam

Reaction—neutral or mildly alkaline

Other characteristics—as much as 20 percent pebbles in some strata in some pedons

*Bqkm horizon:*

Effervescence—slightly effervescent to violently effervescent

Content of rock fragments—as much as 30 percent pebbles in some strata in some pedons  
 Cementation—continuous, strongly cemented plates alternating with weakly cemented or noncemented layers

**2Ck horizon:**

Value—5 to 7 dry, 4 to 6 moist

Chroma—2 to 4

Content of rock fragments—35 to 60 percent pebbles, as much as 5 percent cobbles

## Needle Peak Series

*Depth class:* Very deep

*Drainage class:* Somewhat poorly drained

*Parent material:* Alluvium that is derived from various kinds of rock and includes some loess and volcanic ash

*Positions on landscape:* Inset fans, fan skirts

*Slope:* 0 to 2 percent

*Mean annual precipitation:* About 8 inches

*Mean annual temperature:* About 49 degrees F

**Taxonomic class:** Fine-silty, mixed (calcareous), mesic Aquic Torriorthents

### Typical Pedon

A—0 to 3 inches; light brownish gray (2.5Y 6/2) silt loam, very dark grayish brown (2.5Y 3/2) moist; weak medium platy structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine roots; common very fine tubular pores; moderately alkaline (pH 8.0); abrupt smooth boundary.

C—3 to 8 inches; light gray (2.5Y 7/2) silt loam, dark grayish brown (2.5Y 4/2) moist; massive; soft, very friable, slightly sticky and slightly plastic; common fine and medium roots and many very fine roots; common very fine tubular pores; slightly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Ck1—8 to 16 inches; light gray (2.5Y 7/2) silt loam, dark grayish brown (2.5Y 4/2) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and common fine roots; common very fine tubular pores; few fine lime threads; violently effervescent; strongly alkaline (pH 9.0); gradual wavy boundary.

Ck2—16 to 23 inches; light brownish gray (2.5Y 6/2) silt loam, dark grayish brown (2.5Y 4/2) moist; common fine distinct mottles that are yellowish brown (10YR 5/4) and brownish yellow (10YR 6/6) moist; massive; slightly hard, very friable, sticky and slightly plastic; few very fine and fine roots;

common very fine tubular pores; few fine lime threads; violently effervescent; strongly alkaline (pH 9.0); gradual wavy boundary.

C'1—23 to 45 inches; light brownish gray (2.5Y 6/2) silt loam, dark grayish brown (2.5Y 4/2) moist; many fine and medium distinct mottles that are dark yellowish brown (10YR 4/6) and yellow (10YR 7/8) moist; massive; hard, friable, sticky and plastic; few very fine and fine roots; many very fine tubular pores; violently effervescent; strongly alkaline (pH 8.6); gradual wavy boundary.

C'2—45 to 60 inches; light gray (2.5Y 7/2) silt loam, grayish brown (2.5Y 5/2) moist; many coarse and medium faint and distinct mottles that are dark yellowish brown (10YR 4/4) and light yellowish brown (2.5Y 6/4) moist; massive; slightly hard, friable, sticky and plastic; few very fine roots; many very fine and few fine tubular pores; violently effervescent; strongly alkaline (pH 8.8).

### Typical Pedon Location

*Soil name and map unit in which located:* Needle Peak silt loam in Needle Peak-Batan-Yobe association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 18 miles southeast of Austin; about 1,400 feet south and 400 feet west of the northeast corner of sec. 26, T. 16 N., R. 44 E.

### Range in Characteristics

*Depth to the seasonal high water table:* 48 to 72 inches

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to lime accumulation:* Less than 10 inches

*Other characteristics:* Mottles at a depth of more than 20 inches in most pedons

### Control section:

Texture—silt loam or silty clay loam

Content of clay—20 to 35 percent

### A horizon:

Hue—10YR or 2.5Y

Value—3 or 4 moist

Chroma—2 or 3

Structure—platy or subangular blocky

Reaction—mildly alkaline to strongly alkaline

Other characteristics—slightly effervescent in some pedons

### C horizon:

Hue—10YR or 2.5Y

Value—6 to 8 dry, 4 to 6 moist

Chroma—2 or 3

Structure—angular blocky, subangular blocky, or massive

Reaction—moderately alkaline to very strongly alkaline

**Newlands Series***Depth class:* Deep*Drainage class:* Well drained*Parent material:* Residuum and colluvium derived from rhyolite and andesite*Slope:* 8 to 15 percent*Mean annual precipitation:* About 15 inches*Mean annual temperature:* About 41 degrees F**Taxonomic class:** Fine-loamy, mixed Argic Cryoborolls**Typical Pedon**

About 10 percent of the surface is covered with pebbles, 5 percent with cobbles, 5 percent with stones, and 15 percent with boulders.

A1—0 to 4 inches; dark grayish brown (10YR 4/2) bouldery loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine interstitial pores; 10 percent pebbles, 5 percent cobbles, and 5 percent stones; neutral (pH 6.8); abrupt smooth boundary.

A2—4 to 10 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and nonplastic; common fine roots and few very fine and medium roots; common very fine interstitial pores; 10 percent pebbles; neutral (pH 6.8); abrupt smooth boundary.

Bt1—10 to 14 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine roots and few very fine and medium roots; common very fine and fine interstitial pores; few thin clay films on faces of peds; 20 percent pebbles; neutral (pH 7.0); clear wavy boundary.

Bt2—14 to 22 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure parting to moderate medium angular blocky; slightly hard, friable, sticky and plastic; few very fine and fine roots; few very fine and fine interstitial pores; common thin clay films on faces of peds; 25 percent pebbles; neutral (pH 7.0); gradual wavy boundary.

Bt3—22 to 35 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; hard, friable, sticky and plastic; few very fine and fine roots; common very fine and fine interstitial pores; few thin clay films on faces of peds; 30 percent pebbles; neutral (pH 7.0); clear smooth boundary.

Bt4—35 to 46 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, sticky and plastic; few fine roots; common fine interstitial pores; 55 percent pebbles; neutral (pH 7.2); abrupt broken boundary.

Cr—46 to 57 inches; light yellowish brown (10YR 6/4) saprolite, dark yellowish brown (10YR 4/4) variegated with reddish yellow (7.5YR 6/6) and strong brown (7.5YR 5/6) moist; massive; slightly hard, friable, sticky and plastic; neutral (pH 7.2); gradual wavy boundary.

R—57 inches; fractured, unweathered tuff.

**Typical Pedon Location**

*Soil name and map unit in which located:* Newlands extremely bouldery loam, 8 to 15 percent slopes, in Newlands-Packer-Hapgood association, strongly sloping

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 18 miles east of Austin; about 1,300 feet west of the northeast corner of sec. 35, T. 20 N., R. 46 E.

**Range in Characteristics**

*Soil moisture content:* Moist in some part in October to mid-July; dry late in summer to early in fall

*Average annual soil temperature:* 41 to 45 degrees F

*Mean summer soil temperature:* 56 to 59 degrees F

*Thickness of the mollic epipedon:* 12 to 16 inches

*Depth to bedrock:* 40 to 60 inches

**A horizon:**

Hue—10YR or 7.5YR

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3

Structure—granular or subangular blocky

**Bt2 horizon:**

Hue—10YR or 7.5YR

Value—5 or 6 dry, 3 to 5 moist

Chroma—3 or 4

Texture—clay loam or sandy clay loam

Content of clay—averages 27 to 35 percent

Content of rock fragments—averages 15 to 35 percent gravel

Structure—subangular blocky, angular blocky, or prismatic

**Newpass Series**

*Depth class:* Moderately deep to duripan and bedrock

*Drainage class:* Well drained

*Parent material:* Residuum that is derived from volcanic and metavolcanic rock and includes some loess

*Positions on landscape:* Hills, mountains

*Slope:* 8 to 50 percent

*Mean annual precipitation:* About 9 inches

*Mean annual temperature:* About 48 degrees F

**Taxonomic class:** Fine, montmorillonitic, mesic  
Haploxerollic Nadurargids

### Typical Pedon

About 75 percent of the surface is covered with pebbles and 10 percent with cobbles.

A—0 to 4 inches; light brownish gray (10YR 6/2) very gravelly fine sandy loam, dark grayish brown (10YR 4/2) moist; strong thick platy structure; slightly hard, very friable, slightly sticky and nonplastic; common fine and medium roots; few very fine and fine vesicular pores; 40 percent pebbles; mildly alkaline (pH 7.6); abrupt smooth boundary.

Btn1—4 to 7 inches; brown (7.5YR 4/4) clay, brown (7.5YR 4/4) moist; strong fine prismatic structure parting to strong fine angular blocky; hard, firm, very sticky and very plastic; many very fine roots and few fine and medium roots; common fine and medium tubular pores; continuous thick clay films on faces of peds and lining pores; 5 percent pebbles; moderately alkaline (pH 8.0); clear smooth boundary.

Btn2—7 to 14 inches; brown (7.5YR 4/4) clay, brown (7.5YR 4/4) moist; strong medium prismatic structure parting to strong medium angular blocky; very hard, very firm, very sticky and very plastic; few fine and medium roots and common very fine expd roots; few fine and medium tubular pores; continuous thick clay films on faces of peds and lining pores; 10 percent pebbles; lime coatings on the underside of pebbles; moderately alkaline (pH 8.2); clear smooth boundary.

Btk—14 to 17 inches; dark yellowish brown (10YR 4/4) very gravelly clay, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; hard, firm, very sticky and very plastic; few fine roots; common fine tubular pores; continuous moderately thick clay films on faces of peds and lining pores; 40 percent pebbles; common medium soft lime masses and thin lime and silica coatings on the underside of pebbles; violently effervescent; strongly alkaline (pH 8.6); clear wavy boundary.

Bqk—17 to 24 inches; brown (7.5YR 5/4) very cobbly silty clay, brown (7.5YR 4/4) moist; massive; slightly hard, friable, very sticky and very plastic; few fine roots; common fine tubular pores; 30 percent weak discontinuous silica cementation; 15 percent pebbles and 40 percent cobbles; common medium soft lime masses and silica coatings on rock

fragments; violently effervescent; strongly alkaline (pH 8.6); clear wavy boundary.

Bqkm—24 to 26 inches; strongly cemented duripan that has a thin discontinuous laminar cap; very hard, very firm; violently effervescent; clear wavy boundary.

R—26 inches; rhyolite.

### Typical Pedon Location

*Soil name and map unit in which located:* Newpass very gravelly fine sandy loam, 15 to 30 percent slopes, in Newpass-Jung association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 6 miles northwest of Austin; about 100 feet south and 400 feet west of the northeast corner of sec. 36, T. 20 N., R. 42 E.

### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in mid-June through October

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to the duripan:* 20 to 29 inches

*Depth to bedrock:* 21 to 36 inches

*Control section:*

Content of clay—45 to 60 percent

Content of rock fragments—averages 15 to 35 percent, but is less than 15 percent, mainly pebbles, in the upper part and 25 to 50 percent, mainly pebbles and cobbles, in the lower part

*A horizon:*

Value—6 or 7 dry, 3 to 5 moist

Chroma—2 or 3

Structure—platy or subangular blocky

Reaction—mildly alkaline or moderately alkaline

*Bt horizon:*

Hue—10YR or 7.5YR

Value—dominantly 4 or 5 dry, but 6 in the upper part in some pedons; 3 or 4 moist

Chroma—3, 4, or 6

Reaction—moderately alkaline to very strongly alkaline, commonly increasing in alkalinity with increasing depth

Exchangeable sodium percentage: 15 to 30 in the upper part, 5 to 15 in the lower part

### Ninemile Series

*Depth class:* Shallow

*Drainage class:* Well drained

*Parent material:* Residuum that is derived from andesite, basalt, and tuff and includes some volcanic ash

*Positions on landscape:* Stable side slopes of mountains

*Slope:* 15 to 30 percent

*Mean annual precipitation:* About 14 inches

*Mean annual temperature:* About 43 degrees F

**Taxonomic class:** Clayey, montmorillonitic, frigid Lithic Argixerolls

#### Typical Pedon

About 25 percent of the surface is covered with pebbles and 50 percent with cobbles and stones.

A1—0 to 4 inches; dark brown (10YR 4/3) extremely cobbly loam, dark brown (10YR 3/3) moist; moderate medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine interstitial pores; 20 percent pebbles and 40 percent cobbles and stones; neutral (pH 7.0); abrupt wavy boundary.

A2—4 to 7 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate very fine and fine granular structure; slightly hard, friable, sticky and plastic; common fine roots and few very fine and medium roots; common fine interstitial pores; 10 percent pebbles; neutral (pH 7.0); abrupt wavy boundary.

Bt1—7 to 14 inches; dark brown (10YR 4/3) clay, dark brown (10YR 3/3) moist; strong fine and medium prismatic structure; hard, firm, very sticky and very plastic; common medium and few fine expd roots along the faces of peds; common fine and very fine tubular pores; common moderately thick clay films lining pores and on faces of peds; 10 percent cobbles; neutral (pH 6.8); clear wavy boundary.

Bt2—14 to 19 inches; brown (10YR 5/3) clay, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium angular blocky; hard, firm, very sticky and very plastic; few fine roots; few very fine tubular pores; many thick pressure faces; 10 percent cobbles; neutral (pH 6.8); abrupt wavy boundary.

R—19 inches; fractured andesite.

#### Typical Pedon Location

*Soil name and map unit in which located:* Ninemile extremely cobbly loam, 15 to 30 percent slopes, in Robson-Ninemile-Ravenswood association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 16 miles east of Austin; 1,300 feet north of the southwest corner of sec. 28, T. 19 N., R. 46 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry mainly late in June to early in October

*Average annual soil temperature:* 44 to 47 degrees F

*Thickness of the mollic epipedon:* 6 to 15 inches (commonly includes part or all of the argillic horizon)

*Content of clay in the control section:* Averages 40 to 60 percent

*Reaction:* Slightly acid to mildly alkaline

*Depth to bedrock:* 10 to 20 inches

*Other characteristics:* The upper 1 to 3 inches of bedrock weathered in some pedons where the depth to bedrock is less than 15 inches

#### A horizon:

Value—3 to 5 dry, 2 or 3 moist

Chroma—1 to 3

Structure—thin to thick and platy, or fine or medium and granular

Consistence—soft or slightly hard (dry), nonsticky or slightly sticky and nonplastic to plastic (wet)

Reaction—slightly acid to mildly alkaline

Other characteristics—value of 6 in the upper 1 or 2 inches and massive in some pedons

#### Bt horizon:

Hue—5YR, 7.5YR, or 10YR

Value—3 to 6 dry, 3 or 4 moist

Chroma—2 to 4

Content of clay—40 to 60 percent

Texture—clay or gravelly clay

Content of rock fragments—0 to 30 percent pebbles or cobbles

Structure—moderate or strong and subangular blocky, angular blocky, or prismatic

### Nobuck Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Colluvium derived from various kinds of volcanic rock

*Positions on landscape:* Side slopes of mountains

*Slope:* 15 to 30 percent

*Mean annual precipitation:* About 10 inches

*Mean annual temperature:* About 44 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, frigid Xerollic Haplargids

#### Typical Pedon

About 35 percent of the surface is covered with pebbles and 25 percent with cobbles and stones.

A1—0 to 4 inches; light brownish gray (10YR 6/2) very cobbly loam, dark brown (10YR 4/3) moist; weak medium platy structure; soft, very friable, nonsticky and slightly plastic; common very fine and fine



roots; common very fine and fine vesicular pores; 35 percent pebbles and 20 percent cobbles; neutral (pH 7.0); clear wavy boundary.

A2—4 to 7 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 4/3) moist; weak thin platy structure; soft, very friable, nonsticky and slightly plastic; common very fine, fine, and medium roots; common very fine and fine interstitial pores; 40 percent pebbles; neutral (pH 7.0); gradual wavy boundary.

A3—7 to 12 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 4/3) moist; moderate medium and coarse subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common very fine and fine roots and few medium and coarse roots; common very fine and fine interstitial pores; 35 percent pebbles and 5 percent cobbles; mildly alkaline (pH 7.4); clear wavy boundary.

Bt—12 to 23 inches; pale brown (10YR 6/3) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common very fine and few fine interstitial pores; common thin clay films on faces of peds; 35 percent pebbles, 5 percent cobbles, and 5 percent stones; mildly alkaline (pH 7.6); clear wavy boundary.

Btk1—23 to 32 inches; pale brown (10YR 6/3) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common fine interstitial pores; common thin clay films on faces of peds; 35 percent pebbles and 10 percent cobbles; few fine irregularly shaped lime seams and filaments; strongly effervescent; moderately alkaline (pH 8.0); clear wavy boundary.

Btk2—32 to 38 inches; pale brown (10YR 6/3) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, sticky and very plastic; common very fine and fine roots; common fine interstitial pores; many moderately thick clay films on faces of peds; 35 percent pebbles, 15 percent cobbles, and 5 percent stones; common medium irregularly shaped lime seams and filaments; strongly effervescent; moderately alkaline (pH 8.0); clear wavy boundary.

Bk—38 to 42 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, dark yellowish brown (10YR 4/6) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable,

sticky and plastic; common very fine and fine roots; common fine interstitial pores; 10 percent weak durinodes 5 to 15 millimeters in diameter; 35 percent pebbles, 15 percent cobbles, and 5 percent stones; few fine irregularly shaped lime seams and filaments; violently effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Bqk—42 to 60 inches; very pale brown (10YR 7/4) very gravelly loam, brownish yellow (10YR 6/6) moist; massive; hard, firm, sticky and nonplastic; few fine roots; few very fine interstitial pores; continuous weak silica and lime cementation and about 10 percent discontinuous strong silica and lime cementation; 35 percent pebbles, 15 percent cobbles, and 5 percent stones; violently effervescent; moderately alkaline (pH 8.0).

### Typical Pedon Location

*Soil name and map unit in which located:* Nobuck very cobbly loam, 15 to 30 percent slopes, in Punchbowl-Locane-Nobuck association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 16 miles east of Austin; about 650 feet west and 1,950 feet north of the southwest corner of sec. 6, T. 19 N., R. 46 E.

### Range in Characteristics

*Soil moisture content:* Moist in some part in mid-October to mid-June; dry in mid-June to mid-October

*Average annual soil temperature:* 43 to 47 degrees F

*Depth to the Btk horizon:* 22 to 40 inches

*Depth to the Bqk horizon:* 40 to 60 inches

### Control section:

Content of clay—25 to 35 percent

Content of rock fragments—35 to 60 percent, mainly pebbles

### A horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3

Structure—platy or granular

Consistence—soft or slightly hard (dry), very friable or friable (moist)

Reaction—neutral or mildly alkaline

### Bt and Btk horizons:

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4

Texture—very gravelly loam, very gravelly clay loam, or very gravelly sandy clay loam

Structure—prismatic, angular blocky, or subangular blocky

Reaction—mildly alkaline or moderately alkaline

Effervescence (matrix)—noneffervescent or slightly effervescent in the upper part, strongly

effervescent or violently effervescent in the lower part

Content of lime—few or common seams and filaments

*Bqk horizon:*

Value—6 or 7 dry, 4 or 5 moist

Chroma—3, 4, or 6

Texture—very gravelly sandy loam or very gravelly loam

Reaction—moderately alkaline or strongly alkaline

Other characteristics—continuous weak silica and lime cementation or 20 to 40 percent durinodes in a firm and brittle matrix

### **Novacan Series**

*Depth class:* Moderately deep to duripan

*Drainage class:* Well drained

*Parent material:* Mixed volcanic alluvium

*Positions on landscape:* Fan piedmonts

*Slope:* 2 to 8 percent

*Mean annual precipitation:* About 9 inches

*Mean annual temperature:* About 44 degrees F

**Taxonomic class:** Fine, montmorillonitic, mesic Haploxerollic Durargids

#### **Typical Pedon**

About 10 percent of the surface is covered with pebbles and 25 percent with cobbles.

A1—0 to 3 inches; brown (10YR 5/3) cobbly loam, very dark grayish brown (10YR 3/2) moist; weak thin platy structure parting to moderate fine granular; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine interstitial pores; 15 percent pebbles and 15 percent cobbles; neutral (pH 7.2); abrupt wavy boundary.

A2—3 to 5 inches; pale brown (10YR 6/3) very cobbly loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; many very fine roots and common fine and medium roots; common very fine interstitial pores; 15 percent pebbles and 20 percent cobbles; mildly alkaline (pH 7.6); abrupt wavy boundary.

Bt1—5 to 11 inches; brown (7.5YR 4/4) gravelly clay, dark brown (7.5YR 3/4) moist; moderate medium prismatic structure parting to moderate medium angular blocky; hard, friable, very sticky and very plastic; common very fine expd roots and few fine and medium roots; common fine interstitial pores; common moderately thick clay films on faces of

peds; 25 percent pebbles; mildly alkaline (pH 7.6); clear wavy boundary.

Bt2—11 to 18 inches; brown (7.5YR 5/4) clay, brown (7.5YR 4/4) moist; strong medium prismatic structure; hard, firm, very sticky and very plastic; few very fine, fine, and medium roots; common fine interstitial pores; common moderately thick clay films on faces of peds and lining pores; 10 percent pebbles; mildly alkaline (pH 7.6); clear wavy boundary.

Btk—18 to 24 inches; brownish yellow (10YR 6/6) gravelly clay loam, dark yellowish brown (10YR 4/6) moist; massive; hard, firm, very sticky and very plastic; common thin clay films bridging mineral grains; 30 percent pebbles; common fine seams and filaments or threads of lime; strongly effervescent; mildly alkaline (pH 7.8); clear wavy boundary.

Bqkm—24 to 45 inches; light yellowish brown (10YR 6/4), continuous, strongly cemented duripan, dark yellowish brown (10YR 3/4) moist; massive; very hard, very firm; 15 percent pebbles, 35 percent cobbles, and 10 percent stones; discontinuous thin laminar cap; common medium silica and lime coatings and pendants on the underside of rock fragments; strongly effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

Bqk—45 to 60 inches; pale brown (10YR 6/3) very cobbly loamy sand, brown (10YR 4/3) moist; massive; hard, firm, nonsticky and nonplastic; few very fine pores; 20 percent pebbles, 30 percent cobbles, and 5 percent stones; 50 percent discontinuous strong cementation; common fine concretions and seams of lime; common medium silica and lime coatings and pendants on the underside of rock fragments; strongly effervescent; strongly alkaline (pH 8.8).

#### **Typical Pedon Location**

*Map unit in which located:* Novacan cobbly loam, 2 to 8 percent slopes

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 18 miles east of Austin, in the Monitor Valley; about 1,550 feet south and 3,650 feet east of the northwest corner of sec. 6, T. 17 N., R. 47 E.

#### **Range in Characteristics**

*Soil moisture content:* Moist in some part from November through June; dry in July through October

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to the duripan and the base of the argillic horizon:* 20 to 30 inches

*Depth to carbonates:* 14 to 24 inches

*Other characteristics:* Abrupt textural change occurs at the boundary between the A and B horizons

*Control section:*

Content of clay—45 to 60 percent

Content of rock fragments—10 to 25 percent, mainly pebbles

*A horizon:*

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3

Reaction—neutral or mildly alkaline

*Bt horizon:*

Hue—10YR or 7.5YR

Value—4 to 6 dry, 3 or 4 moist

Chroma—4 to 6

Reaction—mildly alkaline or moderately alkaline

## **Ocala Series**

*Depth class:* Very deep

*Drainage class:* Somewhat poorly drained

*Parent material:* Silty alluvium that is derived from various kinds of rock and includes some volcanic ash

*Positions on landscape:* Lake plains, alluvial flats

*Slope:* 0 to 2 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 50 degrees F

**Taxonomic class:** Fine-silty, mixed (calcareous), mesic Aeric Halaquepts

### **Typical Pedon**

A1—0 to 2 inches; light gray (10YR 7/2) silty clay loam, brown (10YR 5/3) moist; moderate medium platy structure; slightly hard, friable, nonsticky and nonplastic; few fine roots; common fine vesicular pores; strongly effervescent; very strongly alkaline (pH 9.2); clear smooth boundary.

A2—2 to 6 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 4/3) moist; moderate fine granular structure; slightly hard, friable, sticky and plastic; common fine and medium roots; few fine tubular pores; strongly effervescent; very strongly alkaline (pH 9.2); clear smooth boundary.

C—6 to 13 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots; few fine tubular pores; strongly effervescent; very strongly alkaline (pH 9.2); abrupt wavy boundary.

Cqk1—13 to 18 inches; white (10YR 8/2) silt loam, pale brown (10YR 6/3) moist; few medium faint mottles

that are yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; few fine roots; few fine tubular pores; 15 percent weakly cemented durinodes; strongly effervescent; very strongly alkaline (pH 9.2); abrupt broken boundary.

Cqk2—18 to 26 inches; very pale brown (10YR 7/3), continuous, weakly silica-cemented silt loam, brown (10YR 5/3) moist; common medium faint mottles that are dark grayish brown (10YR 4/2) moist; massive; hard, firm, slightly sticky and slightly plastic; brittle; few fine roots; few fine tubular pores; strongly effervescent; strongly alkaline (pH 8.8); gradual wavy boundary.

Cqk3—26 to 36 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; common medium faint mottles that are pale brown (10YR 6/3) and dark grayish brown (10YR 5/2) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots; weak fine tubular pores; 30 percent discontinuous weak cementation; strongly alkaline (pH 8.8); gradual wavy boundary.

Cqk4—36 to 60 inches; white (10YR 8/2), continuous, weakly silica-cemented silt loam, pale brown (10YR 6/3) moist; few medium faint mottles that are yellowish brown (10YR 5/4) moist; massive; very hard, very firm, slightly sticky and slightly plastic; brittle; few fine tubular pores; strongly effervescent; strongly alkaline (pH 8.6).

### **Typical Pedon Location**

*Soil name and map unit in which located:* Ocala silty clay loam, occasionally flooded, in Batan-Ocala-Ocala, rarely flooded, association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 26 miles southeast of Battle Mountain; about 1,000 feet north and 500 feet east of the southwest corner of sec. 19, T. 28 N., R. 48 E.

### **Range in Characteristics**

*Soil moisture content:* Saturated to a depth of 40 inches for 1 month or more in most years

*Average annual soil temperature:* 50 to 54 degrees F

*Depth to the weakly cemented horizon:* 13 to 30 inches

*Cementation:* Weakly cemented layers present in some pedons, strata that are 20 to 70 percent durinodes in a friable matrix present above the weakly cemented layers in some pedons

*Reaction:* Strongly alkaline or very strongly alkaline

*Content of salt and sodium:* Generally strongly affected by salt and sodium in the upper 10 inches only, but areas that have been flood-irrigated affected below this depth

*Depth to lime concretions:* More than 35 inches in most pedons

*Depth to iron mottles:* More than 12 inches

*Other characteristics:* Strata or lenses of noncalcareous, mildly alkaline volcanic ash as much as 4 inches thick present in most pedons, generally below a depth of 30 inches

*Control section:*

Texture—dominantly silty clay loam or silt loam, but thin strata of clay loam, loam, or silty clay in some pedons

Content of clay—18 to 35 percent

*A horizon:*

Hue—10YR to 5Y

Value—6 to 8 dry, 4 to 7 moist

Chroma—1 to 3

Structure—granular or platy

*C and Cqk horizons:*

Hue—10YR to 5Y

Value—6 to 8 dry, 4 to 7 moist

Chroma—1 to 3

Structure—platy or massive

## Old Camp Series

*Depth class:* Shallow

*Drainage class:* Well drained

*Parent material:* Residuum that is derived from basalt and andesite and includes some volcanic ash

*Positions on landscape:* Crests and side slopes of hills and mountains

*Slope:* 4 to 50 percent

*Mean annual precipitation:* About 10 inches

*Mean annual temperature:* About 47 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, mesic Lithic Xerollic Haplargids

### Typical Pedon

About 50 percent of the surface is covered with pebbles.

A—0 to 2 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; many very fine vesicular pores; 35 percent pebbles; mildly alkaline (pH 7.8); abrupt smooth boundary.

Bt—2 to 5 inches; light yellowish brown (10YR 6/4) very gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate fine granular structure; slightly hard, very friable, sticky and plastic; common very fine and fine roots; common very fine and fine

interstitial pores; 45 percent pebbles and 10 percent cobbles; few moderately thick clay films on faces of peds; mildly alkaline (pH 7.8); clear smooth boundary.

Btk—5 to 11 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; slightly hard, friable, very sticky and very plastic; few very fine and fine roots; few very fine tubular pores; 50 percent pebbles and 5 percent cobbles; common moderately thick clay films on faces of peds and lining pores; few very thin lime coatings on the underside of rock fragments; mildly alkaline (pH 7.8); abrupt irregular boundary.

R—11 inches; fractured andesite; lime coatings in fractures.

### Typical Pedon Location

*Soil name and map unit in which located:* Old Camp very gravelly loam, 15 to 30 percent slopes, in Old Camp-Minat-Osoll association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 14 miles southwest of Battle Mountain; about 1,050 feet south of the northeast corner of sec. 22, T. 31 N., R. 42 E.

### Range in Characteristics

*Soil moisture content:* Usually dry, but moist in November through May

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to bedrock:* 10 to 20 inches

*Content of rock fragments in the control section:*

Dominantly 50 to 75 percent, mainly cobbles and stones, but 35 to 50 percent in the upper part in some pedons

*A horizon:*

Value—5 to 7 dry, 3 or 4 moist

Chroma—2 or 3

Structure—weak and granular or platy, or massive

Reaction—neutral or mildly alkaline

*Bt horizon:*

Hue—10YR or 7.5YR

Value—4 to 7 dry, 3 to 5 moist

Chroma—2 to 4

Texture—dominantly clay loam or sandy clay loam, but strata of loam in some pedons

Content of rock fragments—averages 50 to 75 percent, mainly pebbles

Content of clay—27 to 35 percent

Structure—weak or moderate, fine to coarse, and angular blocky or subangular blocky

Reaction—neutral or mildly alkaline in the upper part, moderately alkaline or strongly alkaline in the lower part

Other characteristics—few to continuous lime coatings on rock fragments or bedrock

### Taxadjunct Features

The Old Camp soils in this survey area are taxadjuncts because the rock fragments in the Bt horizon are mainly pebbles instead of the cobbles or stones that are typical for the series. This difference, however, does not significantly affect use and management.

## Orovada Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Loess that is high in content of volcanic ash over alluvium derived from various kinds of rock

*Positions on landscape:* Fan skirts, fan aprons, inset fans

*Slope:* 0 to 8 percent

*Mean annual precipitation:* About 8 inches

*Mean annual temperature:* About 47 degrees F

**Taxonomic class:** Coarse-loamy, mixed, mesic Durixerollic Camborthids

### Typical Pedon

A1—0 to 4 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 3/3) moist; strong coarse prismatic structure parting to moderate thin platy; slightly hard, very friable, slightly sticky and slightly plastic; many very fine random roots; many very fine vesicular, interstitial, and tubular pores; neutral (pH 7.2); abrupt wavy boundary.

A2—4 to 8 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 3/3) moist; weak coarse and very coarse prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine random roots and few fine and medium oblique roots; common very fine tubular and interstitial pores; mildly alkaline (pH 7.8); clear wavy boundary.

Bw—8 to 20 inches; light gray (10YR 7/2) fine sandy loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine random roots and very few very fine, fine, and medium oblique roots; common very fine tubular pores and many very fine interstitial pores; moderately alkaline (pH 7.8); clear wavy boundary.

Bqk1—20 to 31 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine

random roots and very few fine and medium oblique roots; common very fine tubular and interstitial pores; 25 percent moderately strong durinodes 10 to 30 millimeters in diameter; strongly effervescent; strongly alkaline (pH 8.6); gradual smooth boundary.

Bqk2—31 to 44 inches; light gray (10YR 7/2) fine sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine random roots and very few fine and medium oblique roots; few very fine tubular pores and common very fine interstitial pores; 5 percent pebbles; 25 percent moderately strong durinodes 10 to 30 millimeters in diameter; strongly effervescent; strongly alkaline (pH 8.8); gradual smooth boundary.

Bqk3—44 to 65 inches; very pale brown (10YR 7/3) fine sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine tubular pores and common very fine interstitial pores; 5 percent pebbles; 15 percent moderately strong and strong durinodes 2 to 20 millimeters in diameter; strongly effervescent; strongly alkaline (pH 8.6).

### Typical Pedon Location

*Map unit in which located:* Orovada fine sandy loam, 2 to 4 percent slopes

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 9 miles north of Battle Mountain; about 1,550 feet east and 1,400 feet north of the southwest corner of sec. 28, T. 34 N., R. 45 E.

### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry late in June to early in November

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to the Bq or Bqk horizon:* 10 to 28 inches

#### Control section:

Texture—dominantly stratified fine sandy loam, very fine sandy loam, loam, or silt loam with strata of loamy fine sand or sandy loam in some pedons  
Content of clay—5 to 18 percent  
Content of rock fragments—0 to 15 percent, mainly pebbles

#### A horizon:

Hue—10YR or 2.5Y

Value—5 to 7 dry and 3 or 4 moist (value of more than 5.5 dry and 3.5 moist occurs when the upper 7 inches is mixed)

Chroma—2 to 4

Structure—platy, prismatic, or massive

Consistence—soft or slightly hard

Reaction—neutral to moderately alkaline

*Bw horizon:*

Hue—10YR or 2.5Y  
 Value—6 or 7 dry, 3 to 5 moist  
 Chroma—2 to 6  
 Texture—fine sandy loam, very fine sandy loam, loam, or silt loam  
 Content of clay—5 to 18 percent  
 Content of rock fragments—averages 0 to 15 percent pebbles  
 Structure—subangular blocky, prismatic, or massive  
 Reaction—mildly alkaline or moderately alkaline

*Bq or Bqk horizon:*

Hue—10YR or 2.5Y  
 Value—6 or 7 dry, 3 to 5 moist  
 Chroma—2 to 6  
 Content of rock fragments—as much as 30 percent pebbles in some strata in some pedons  
 Consistence—soft to hard, very friable or friable  
 Reaction—moderately alkaline to very strongly alkaline, increasing in alkalinity with increasing depth  
 Content of durinodes—20 to 80 percent  
 Other characteristics—gypsum crystals below a depth of 37 inches in some pedons, duripan or very gravelly strata below a depth of 40 inches in some pedons

**Osoll Series**

*Depth class:* Shallow to duripan

*Drainage class:* Well drained

*Parent material:* Residuum and colluvium that is derived from various kinds of rock and includes some loess

*Positions on landscape:* Crests and side slopes of hills

*Slope:* 8 to 50 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 50 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, mesic, shallow Typic Durorthids

**Typical Pedon**

About 30 percent of the surface is covered with pebbles.

A—0 to 5 inches; light gray (10YR 7/2) gravelly loam, dark brown (10YR 4/3) moist; moderate thick platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine vesicular pores; 30 percent pebbles; slightly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Bqk—5 to 12 inches; very pale brown (10YR 7/3) very

gravelly loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and slightly plastic; common very fine, fine, and medium roots; common very fine and fine interstitial pores; 20 percent weak or moderate durinodes 5 to 20 millimeters in diameter; 30 percent pebbles and 15 percent cobbles; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary.

Bqkm—12 to 35 inches; very pale brown (10YR 7/4), cobbly, indurated duripan, yellowish brown (10YR 5/4) moist; strong thick plates alternating with massive strata; extremely hard, extremely firm; continuous fractured silica-cemented laminae on top of and in bands throughout the horizon alternating with discontinuous, strongly and weakly silica-cemented strata that are 20 percent hard silica and lime concretions 5 to 20 millimeters in diameter; violently effervescent; strongly alkaline (pH 9.0); abrupt wavy boundary.

2R—35 inches; hard rhyolite capped with silica-cemented laminae 0.5 inch thick.

**Typical Pedon Location**

*Soil name and map unit in which located:* Osoll gravelly loam, 2 to 8 percent slopes, in Laped-Colbar-Osoll association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 52 miles southwest of Battle Mountain; about 800 feet north of the southwest corner of sec. 36, T. 24 N., R. 40 E.

**Range in Characteristics**

*Soil moisture content:* Moist intermittently in winter and spring, dry late in May through November

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to the duripan:* 8 to 14 inches

*Depth to bedrock:* 20 to 40 inches

*Control section:*

Texture—very gravelly loam or very gravelly fine sandy loam

Content of clay—10 to 18 percent

Content of rock fragments—averages 35 to 60 percent, mostly pebbles and some cobbles

*A horizon:*

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 to 4

Reaction—mildly alkaline or moderately alkaline

*Bqk horizon:*

Reaction—moderately alkaline or strongly alkaline

Other characteristics—commonly as much as 30 percent weak to hard durinodes

## Oxcorel Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Alluvium that is derived from various kinds of rock and includes some loess

*Positions on landscape:* Dissected summits and side slopes of fan piedmonts

*Slope:* 2 to 15 percent

*Mean annual temperature:* About 48 degrees F

*Mean annual precipitation:* About 6 inches

**Taxonomic class:** Fine, montmorillonitic, mesic Duric Natrargids

### Typical Pedon

About 30 percent of the surface is covered with pebbles.

A—0 to 6 inches; pale brown (10YR 6/3) gravelly very fine sandy loam, brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few fine and medium roots; common fine and medium vesicular pores; 20 percent pebbles; strongly alkaline (pH 8.6); abrupt smooth boundary.

B<sub>tn1</sub>—6 to 14 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; strong medium prismatic structure parting to strong medium angular blocky; very hard, very firm, very sticky and very plastic; few medium exp<sub>ed</sub> roots and few fine in<sub>ped</sub> roots; few fine and common medium tubular pores; continuous thick pressure faces; 10 percent pebbles; strongly alkaline (pH 8.6); clear smooth boundary.

B<sub>tn2</sub>—14 to 27 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; strong medium prismatic structure; hard, firm, very sticky and very plastic; few fine and medium in<sub>ped</sub> roots and common fine exp<sub>ed</sub> roots; common fine and medium and few very fine tubular pores; 5 percent pebbles; continuous moderately thick clay films on faces of peds and lining pores; slightly effervescent; strongly alkaline (pH 8.6); clear smooth boundary.

B<sub>tnqk</sub>—27 to 37 inches; yellowish brown (10YR 5/6) gravelly clay loam, dark yellowish brown (10YR 4/6) moist; strong medium angular blocky structure; hard, firm, very sticky and very plastic; few fine roots; few fine and medium tubular pores; 20 percent pebbles; common fine clay films on faces of peds and lining pores; 20 percent strongly cemented durinodes; common medium filaments or threads of lime; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary.

B<sub>qk</sub>—37 to 60 inches; brown (10YR 5/3) very gravelly

loam, dark yellowish brown (10YR 4/4) moist; massive; hard, firm, sticky and plastic; few fine roots; few fine tubular pores; 40 percent pebbles; 35 percent strong durinodes; 10 percent weak discontinuous cementation; moderate fine filaments or threads and soft masses of lime; violently effervescent; strongly alkaline (pH 8.8).

### Typical Pedon Location

*Soil name and map unit in which located:* Oxcorel gravelly very fine sandy loam, 2 to 8 percent slopes, in Oxcorel-Wieland-Spasprey association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 22 miles northwest of Austin; about 200 feet south and 1,000 feet west of the northeast corner of sec. 2, T. 22 N., R. 41 E.

### Range in Characteristics

*Soil moisture content:* Usually dry, but moist for short periods in winter and early in spring

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to the base of the natric horizon:* 20 to 40 inches

*Depth to durinodes:* 20 to 34 inches

*Other characteristics:* 0.5- to 2.0-inch-thick E horizon capping the B<sub>t</sub> horizon in some pedons

#### Control section:

Texture—clay or clay loam

Content of clay—35 to 50 percent

Content of rock fragments—0 to 10 percent pebbles in the upper part, 10 to 20 percent pebbles in the lower part

#### A horizon:

Value—6 or 7 dry, 3 to 5 moist

Chroma—2 or 3

#### B<sub>t</sub> horizon:

Hue—7.5YR or 10YR

Value—5 to 7 dry, 4 to 6 moist

Chroma—3 to 6 (chroma of 3 common in the upper part in some pedons)

Reaction—moderately alkaline to very strongly alkaline

Other characteristics—noneffervescent to strongly effervescent in the upper part in the matrix, segregated lime common in the lower part in the matrix, commonly 10 to 30 percent durinodes in the lower part, gypsum present in the lower part in some pedons

#### B<sub>qk</sub> horizon:

Value—5 to 7 dry, 4 to 6 moist

Chroma—3 to 6

Content of rock fragments—35 to 60 percent

Texture—very gravelly sandy loam or very gravelly loam

Other characteristics—dominantly 20 to 60 percent weakly or strongly cemented durinodes and as much as 30 percent discontinuous weak cementation, but less than 20 percent durinodes in the upper part in some pedons

### **Packer Series**

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Residuum that is derived from chert, shale, quartzite, and extrusive volcanic rock and includes some loess and volcanic ash

*Positions on landscape:* Crests and side slopes of mountains

*Slope:* 8 to 75 percent

*Mean annual precipitation:* About 15 inches

*Mean annual temperature:* About 42 degrees F

**Taxonomic class:** Loamy-skeletal, mixed Argic Cryoborolls

#### **Typical Pedon**

About 70 percent of the surface is covered with pebbles and 20 percent with cobbles and stones.

A1—0 to 7 inches; brown (10YR 5/3) extremely gravelly loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure parting to moderate fine granular; soft, very friable, slightly sticky and nonplastic; many very fine and fine roots; common very fine interstitial and tubular pores; 45 percent pebbles and 20 percent cobbles and stones; neutral (pH 6.8); clear smooth boundary.

A2—7 to 10 inches; brown (10YR 5/3) very cobbly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, sticky and plastic; many very fine and fine roots and common medium roots; common very fine tubular pores; 20 percent pebbles and 30 percent cobbles and stones; neutral (pH 6.8); abrupt wavy boundary.

2Bt—10 to 21 inches; yellowish brown (10YR 5/4) extremely cobbly clay loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure parting to moderate medium angular blocky; hard, friable, very sticky and very plastic; common very fine, fine, and medium roots; common very fine tubular pores; common moderately thick clay films lining pores and on faces of peds; 25 percent pebbles, 30 percent cobbles, and 10 percent stones; neutral (pH 7.2); clear wavy boundary.

2C1—21 to 46 inches; brown (10YR 5/3) extremely cobbly loam, dark brown (10YR 4/3) moist; massive;

soft, very friable, sticky and plastic; common fine and medium roots; common very fine interstitial pores; 30 percent pebbles, 35 percent cobbles, and 10 percent stones; neutral (pH 7.3); gradual wavy boundary.

2C2—46 to 60 inches; brown (10YR 5/3) extremely cobbly sandy loam, dark brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; common fine and medium roots; common very fine interstitial pores; 30 percent pebbles, 35 percent cobbles, and 10 percent stones; neutral (pH 7.3).

#### **Typical Pedon Location**

*Soil name and map unit in which located:* Packer extremely gravelly loam, 15 to 30 percent slopes, in Packer-Newlands association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 40 miles northeast of Austin; about 1,400 feet east of the southwest corner of sec. 14, T. 20 N., R. 46 E.

#### **Range in Characteristics**

*Soil moisture content:* Usually dry, but moist in October to late in June

*Average annual soil temperature:* 42 to 45 degrees F

*Average summer soil temperature:* 57 to 59 degrees F

*Thickness of the mollic epipedon:* 7 to 10 inches (includes the upper part of the Bt horizon in some pedons)

*Depth to the base of the Bt horizon:* 9 to 21 inches

*Depth to bedrock:* 40 to more than 60 inches

*Other characteristics:* Thin BA and BC horizons common in some pedons

*Control section:*

Texture—extremely cobbly clay loam, extremely cobbly sandy clay loam, or extremely cobbly loam

Content of clay—averages 18 to 30 percent

Content of rock fragments—60 to 80 percent, including 25 to 60 percent pebbles, 20 to 40 percent cobbles, and as much as 10 percent stones

*A horizon:*

Chroma—2 or 3

Structure—weak or moderate, very fine, fine, or medium, and granular or subangular blocky

Consistence—soft or slightly hard (dry), very friable or friable (moist)

*Bt horizon:*

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4

Structure—weak or moderate, very fine, fine, or



medium, and angular blocky or subangular blocky, or massive

Consistence—slightly hard or hard (dry), slightly sticky to very sticky and slightly plastic to very plastic (wet)

**C horizon:**

Value—5 or 6 dry, 4 or 5 moist

Chroma—3 to 6

Texture—extremely cobbly loam, extremely cobbly fine sandy loam, extremely cobbly sandy loam, or extremely cobbly loamy sand

Content of rock fragments—25 to 50 percent pebbles, 20 to 35 percent cobbles, and as much as 10 percent stones

Consistence—soft to very hard (dry), very friable or friable (moist), slightly sticky or sticky and nonplastic to plastic (wet)

## **Paranat Series**

*Depth class:* Very deep

*Drainage class:* Poorly drained, but drainage has been altered by stream entrenchment or channel realignment in some areas

*Parent material:* Silty fluvial deposits

*Positions on landscape:* Flood plains

*Slope:* 0 to 2 percent

*Mean annual precipitation:* About 8 inches

*Mean annual temperature:* About 48 degrees F

**Taxonomic class:** Fine-silty, mixed (calcareous), mesic Fluvaquentic Haplaquolls

### **Typical Pedon**

A1—0 to 3 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; slightly hard, very friable, sticky and plastic; many very fine and fine roots; many very fine interstitial pores; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

A2—3 to 11 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, very friable, sticky and plastic; many very fine and fine roots; many very fine interstitial pores; strongly effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

AC—11 to 21 inches; light brownish gray (10YR 6/2) silty clay loam, dark grayish brown (10YR 4/2) moist; common fine distinct mottles that are dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable,

very sticky and very plastic; common very fine, fine, and medium roots; common very fine tubular and interstitial pores; strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

C1—21 to 32 inches; white (10YR 8/1) silt loam, gray (10YR 5/1) moist; common fine and medium distinct mottles that are brown (10YR 5/3) moist; massive; soft, very friable, very sticky and plastic; strongly effervescent; 10 percent lime concretions; moderately alkaline (pH 8.0); clear wavy boundary.

C2—32 to 43 inches; white (10YR 8/1) silt loam, light gray (10YR 7/1) moist; many fine distinct mottles that are dark brown (10YR 4/3) moist and many coarse distinct mottles that are grayish brown (2.5Y 5/2) moist; massive; slightly hard, friable, very sticky and plastic; few very fine roots; common very fine tubular pores; slightly effervescent; 10 percent lime concretions; moderately alkaline (pH 8.0); gradual wavy boundary.

C3—43 to 60 inches; light gray (2.5Y 7/2) silt loam, grayish brown (2.5Y 5/2) moist; many medium distinct mottles that are very dark grayish brown (10YR 3/2) and olive (5Y 4/3) moist; massive; slightly hard, friable, sticky and plastic; common very fine tubular pores; slightly effervescent; 35 percent lime concretions; moderately alkaline (pH 7.9).

### **Typical Pedon Location**

*Soil name and map unit in which located:* Paranat silt loam, strongly saline, in Ocala-Sonoma-Paranat association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 5 miles west of Austin; about 500 feet north and 4,000 feet west of the southeast corner of sec. 29, T. 19 N., R. 43 E.

### **Range in Characteristics**

*Soil moisture content:* Dry in mid-summer and early in fall; moist late in fall, in winter and spring, and early in summer

*Depth to an apparent seasonal high water table:*

Commonly 18 to 40 inches in winter to early in summer, but some pedons have been drained

*Average annual soil temperature:* 47 to 52 degrees F

*Thickness of the mollic epipedon:* 10 to 20 inches

*Reaction:* Moderately alkaline or strongly alkaline, usually decreasing in alkalinity with increasing depth

*Calcium carbonate equivalent:* 1 to 10 percent

*Exchangeable sodium percentage:* 0 to 15

*Control section:*

Texture—dominantly stratified silty clay loam and silt loam, but thin strata of very fine sandy loam or silty clay in some pedons

Content of clay—18 to 35 percent  
 Content of rock fragments—less than 5 percent

**A horizon:**

Hue—10YR or 2.5Y  
 Value—4 or 5 dry, 2 or 3 moist  
 Chroma—1 or 2  
 Structure—prismatic, subangular blocky, platy, or granular  
 Other characteristics—one or more buried A horizons as much as 8 inches thick in some pedons

**C horizon:**

Hue—10YR or 2.5Y  
 Value—6 to 8 dry, 4 to 7 moist  
 Chroma—1 to 4  
 Consistence—soft or slightly hard (dry), very friable or friable (moist)  
 Other characteristics—as much as 15 percent filaments, soft masses, or concretions of lime in the upper part in some pedons and as much as 40 percent below a depth of 40 inches in some pedons

## **Perlor Series**

*Depth class:* Shallow

*Drainage class:* Well drained

*Parent material:* Loess over residuum derived from soft, tuffaceous sedimentary rock

*Positions on landscape:* Rolling crests and side slopes of hills

*Slope:* 8 to 15 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 46 degrees F

**Taxonomic class:** Loamy, mixed (calcareous), mesic, shallow Typic Torriorthents

### **Typical Pedon**

About 10 percent of the surface is covered with pebbles.

A1—0 to 3 inches; pale brown (10YR 6/3) very fine sandy loam, dark brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine vesicular pores; 5 percent pebbles; moderately alkaline (pH 8.4); clear smooth boundary.

A2—3 to 7 inches; pale brown (10YR 6/3) loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common very fine

interstitial pores; 5 percent pebbles; slightly effervescent; moderately alkaline (pH 8.2); gradual wavy boundary.

2C1—7 to 12 inches; pale brown (10YR 6/3) sandy loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine interstitial pores; 5 percent pebbles; strongly effervescent; strongly alkaline (pH 8.5); clear smooth boundary.

2C2—12 to 14 inches; very pale brown (10YR 7/3) gravelly sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; common fine interstitial pores; 30 percent pebbles; violently effervescent; strongly alkaline (pH 8.8); clear smooth boundary.

Cr—14 inches; fractured, soft, tuffaceous sedimentary rock; few very fine roots along fractures.

### **Typical Pedon Location**

*Soil name and map unit in which located:* Perl or very fine sandy loam in Genaw-Perl or Puett association  
*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 30 miles southwest of Battle Mountain, in the Fish Creek Basin area; about 1,375 feet north and 1,450 feet west of the southeast corner of sec. 11, T. 27 N., R. 41 E.

### **Range in Characteristics**

*Soil moisture content:* Moist in winter and early in spring, dry in mid-May through November

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to paralithic contact:* 10 to 14 inches

*Reaction:* Moderately alkaline or strongly alkaline, usually increasing in alkalinity with increasing depth

### **Control section:**

Content of clay—averages 10 to 18 percent

Content of rock fragments—averages 5 to 20

percent pebbles, but as much as 30 percent in an individual horizon (as much as 20 percent are soft and platy in some pedons)

### **A horizon:**

Hue—10YR or 2.5Y

Value—6 or 7 dry, 3 or 4 moist

Chroma—2 or 3

Structure—subangular blocky, platy, or massive

Effervescence—dominantly noneffervescent or slightly effervescent, but strongly effervescent in some pedons

### **C horizon:**

Value—6 or 7 dry, 4 to 6 moist

Chroma—2 or 3

Texture—loam, sandy loam, or gravelly sandy loam  
 Structure—subangular blocky or massive  
 Effervescence—slightly effervescent to violently effervescent

### ***Pineval Series***

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Mixed gravelly alluvium

*Positions on landscape:* Fan piedmonts, fan aprons

*Slope:* 2 to 30 percent

*Mean annual precipitation:* About 9 inches

*Mean annual temperature:* About 48 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, mesic  
 Durixerollic Haplargids

#### **Typical Pedon**

About 60 percent of the surface is covered with pebbles and 10 percent with cobbles.

A—0 to 5 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; moderate thick platy structure; slightly hard, friable, slightly sticky and nonplastic; few fine roots; common very fine and fine vesicular pores; 25 percent pebbles and 5 percent cobbles; moderately alkaline (pH 8.0); abrupt wavy boundary.

Bt1—5 to 8 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 4/3) moist; weak medium and fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine interstitial pores; few thin clay films on faces of peds; 35 percent pebbles and 15 percent cobbles; slightly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Bt2—8 to 11 inches; pale brown (10YR 6/3) very gravelly clay loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; many very fine, fine, and medium roots; common very fine interstitial pores; common thin and few moderately thick clay films on faces of peds; 10 percent weak durinodes 5 to 15 millimeters in diameter; 35 percent pebbles and 15 percent cobbles; few fine lime filaments; slightly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Bqk1—11 to 24 inches; pale brown (10YR 6/3) extremely gravelly sandy loam, dark brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine interstitial pores; 50 percent

discontinuous weak silica cementation; 55 percent pebbles and 15 percent cobbles; many lime particles; violently effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

Bqk2—24 to 33 inches; pale brown (10YR 6/3) extremely gravelly sandy loam, dark brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; many very fine and fine roots; many fine interstitial pores; 40 percent continuous weak silica cementation; 55 percent pebbles and 15 percent cobbles; common thin lime coatings on the underside of rock fragments; strongly effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

Bk—33 to 60 inches; pale brown (10YR 6/3) extremely gravelly loamy sand, dark brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; many very fine and fine roots; many fine interstitial pores; 60 percent pebbles and 10 percent cobbles; common thin lime coatings on the underside of rock fragments; slightly effervescent; moderately alkaline (pH 8.4).

#### **Typical Pedon Location**

*Map unit in which located:* Pineval gravelly loam, 2 to 4 percent slopes

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 15 miles northeast of Austin; about 650 feet south and 2,100 feet west of the northeast corner of sec. 17, T. 21 N., R. 46 E.

#### **Range in Characteristics**

*Soil moisture content:* Moist in winter and spring, dry in mid-June through October

*Average annual soil temperature:* 47 to 52 degrees F

*Reaction:* Mildly alkaline or moderately alkaline

*A horizon:*

Hue—10YR or 2.5Y

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3

*Bt horizon:*

Value—5 or 6 dry

Chroma—3 or 4

Texture—very gravelly loam, very gravelly clay loam, or very gravelly sandy clay loam

Content of clay—25 to 35 percent

Content of rock fragments—35 to 60 percent, mostly pebbles

*Bqk horizon:*

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3

Texture—stratified very gravelly sandy loam to extremely gravelly sand

Content of rock fragments—35 to 70 percent, mostly pebbles

### **Poorcal Series**

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Alluvium derived dominantly from sedimentary rock with a component of loess and volcanic ash

*Positions on landscape:* Inset fan remnants

*Slope:* 0 to 4 percent

*Mean annual precipitation:* About 10 inches

*Mean annual temperature:* About 45 degrees F

**Taxonomic class:** Coarse-loamy, mixed, frigid Durixerollic Calciorthids

#### **Typical Pedon**

About 5 percent of the surface is covered with pebbles.

A1—0 to 3 inches; light gray (10YR 7/2) loam, brown (10YR 4/3) moist; moderate thick platy structure; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; many very fine and fine vesicular pores; 5 percent pebbles; few fine filaments or threads of lime; strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.

A2—3 to 5 inches; very pale brown (10YR 7/3) fine sandy loam, brown (10YR 4/3) moist; moderate thick platy structure parting to weak medium subangular blocky; slightly hard, friable, nonsticky and nonplastic; common very fine and fine roots and few medium roots; common very fine and fine interstitial pores; 5 percent pebbles; common fine filaments or threads of lime; violently effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

Bw—5 to 9 inches; very pale brown (10YR 7/3) fine sandy loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common very fine and fine roots and few medium roots; common very fine and fine interstitial pores; 5 percent pebbles; common fine filaments or threads of lime; violently effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Bqk1—9 to 19 inches; white (10YR 8/2) loam, very pale brown (10YR 7/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; 5 percent pebbles; 50 percent very hard, very firm, strongly cemented durinodes; many fine filaments or

threads of lime; violently effervescent; strongly alkaline (pH 8.6); clear wavy boundary.

Bqk2—19 to 30 inches; light gray (10YR 7/2) gravelly sandy loam, brown (10YR 5/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; few fine roots; few very fine tubular pores; 25 percent pebbles; 30 percent hard, firm, weakly cemented durinodes; common fine filaments or threads of lime; violently effervescent; strongly alkaline (pH 8.6); gradual wavy boundary.

2Bqk3—30 to 52 inches; very pale brown (10YR 7/3) very gravelly loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; few fine roots; 35 percent pebbles; 30 percent hard, firm, weakly cemented durinodes; few fine filaments or threads of lime; violently effervescent; strongly alkaline (pH 9.0); gradual wavy boundary.

2Bqk4—52 to 62 inches; very pale brown (10YR 7/3) very gravelly loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; few fine roots; 45 percent pebbles; 30 percent hard, firm durinodes; slightly effervescent; strongly alkaline (pH 8.8).

#### **Typical Pedon Location**

*Soil name and map unit in which located:* Poorcal loam, 0 to 4 percent slopes, in Poorcal-Lopwash association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 21 miles east of Austin; about 500 feet north and 1,500 feet west of the southeast corner of sec. 13, T. 19 N., R. 47 E.

#### **Range in Characteristics**

*Soil moisture content:* Moist in winter and spring, dry in mid-June through October

*Average annual soil temperature:* 45 to 47 degrees F

*Depth to the calcic horizon:* 8 to 20 inches

*Depth to the 2Bqk horizon:* 29 to 40 inches

*Calcium carbonate equivalent in the calcic horizon:* 15 to 35 percent

*Control section:*

Content of clay—5 to 18 percent

Content of rock fragments—15 to 35 percent when mixed, mainly pebbles

*A horizon:*

Value—5 to 7 dry, 3 or 4 moist

Chroma—2 or 3

Reaction—moderately alkaline or strongly alkaline

Consistence—very friable or friable (moist)

*Bw horizon:*

Value—5 to 7 dry, 3 to 5 moist

Chroma—3 or 4

Texture—loam, sandy loam, or fine sandy loam  
 Reaction—moderately alkaline or strongly alkaline  
 Consistence—soft or slightly hard (dry)

*Bqk horizon:*

Value—6 to 8 dry, 5 to 7 moist  
 Chroma—2 to 4  
 Texture—gravelly sandy loam, loam, or gravelly loam  
 Content of durinodes—20 to 50 percent  
 Reaction—strongly alkaline or very strongly alkaline

*2Bqk horizon:*

Value—6 to 8 dry, 5 to 7 moist  
 Chroma—2 to 4  
 Texture—very gravelly loamy sand, very gravelly sandy loam, or very gravelly loam  
 Content of durinodes—20 to 40 percent

### **Puett Series**

*Depth class:* Shallow

*Drainage class:* Well drained

*Parent material:* Residuum derived from tuff and tuffaceous sandstone

*Positions on landscape:* Low hills

*Slope:* 15 to 50 percent

*Mean annual precipitation:* About 9 inches

*Mean annual temperature:* About 47 degrees F

**Taxonomic class:** Loamy, mixed (calcareous), mesic, shallow Xeric Torriorthents

#### **Typical Pedon**

About 25 percent of the surface is covered with pebbles, 10 percent with cobbles, and 2 percent with stones.

A—0 to 4 inches; light brownish gray (10YR 6/2) gravelly sandy loam, dark grayish brown (10YR 4/2) moist; moderate thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many fine tubular pores; 15 percent pebbles; lime coatings on the underside of rock fragments; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary.

C—4 to 15 inches; pale brown (10YR 6/3) gravelly sandy loam, dark brown (10YR 4/3) moist; massive; soft, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common fine tubular pores; 30 percent pebbles; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary.

Cr—15 inches; highly weathered tuff.

#### **Typical Pedon Location**

*Soil name and map unit in which located:* Puett gravelly sandy loam, 15 to 30 percent slopes, very stony, in Bioya-Shabliss-Puett association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 22 miles northeast of Battle Mountain; about 100 feet south and 2,000 feet east of the northwest corner of sec. 1, T. 35 N., R. 47 E.

#### **Range in Characteristics**

*Soil moisture content:* Moist in winter and spring, dry in June through October

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to bedrock:* 10 to 20 inches

*Reaction:* Moderately alkaline or strongly alkaline

*Effervescence:* Strongly effervescent or violently effervescent

*Other characteristics:* Lime coatings on pebbles in the lower part in some pedons

*Control section:*

Content of clay—5 to 10 percent

Content of rock fragments—as much as 35 percent pebbles

*A horizon:*

Hue—10YR or 2.5Y

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 to 4

Structure—weak or moderate, thin to thick, and platy, or massive

*C horizon:*

Hue—10YR or 2.5Y

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 to 4

Texture of the fine-earth fraction—dominantly coarse sandy loam to loam, but ranges from loamy fine sand to loam; gravelly loam or gravelly sandy loam common in some pedons

Structure—subangular blocky or massive

### **Pula Series**

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Alluvium derived from various kinds of rock

*Positions on landscape:* Side slopes of fan piedmont remnants

*Slope:* 15 to 50 percent

*Mean annual precipitation:* About 10 inches

*Mean annual temperature:* About 48 degrees F

**Taxonomic class:** Clayey-skeletal, montmorillonitic, mesic Xerollic Haplargids

**Typical Pedon**

About 45 percent of the surface is covered with pebbles and 30 percent with cobbles.

A—0 to 2 inches; brown (10YR 5/3) very cobbly loam, dark brown (10YR 3/3) moist; moderate thin platy structure; soft, very friable, sticky and plastic; common very fine and fine roots; common fine vesicular and tubular pores; 15 percent pebbles and 20 percent cobbles; mildly alkaline (pH 7.8); clear smooth boundary.

Bt1—2 to 6 inches; brown (10YR 5/3) very gravelly clay loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, very friable, very sticky and very plastic; common very fine and fine roots and few medium roots; common fine interstitial and tubular pores; common thin clay films on faces of peds and lining pores; 25 percent pebbles and 10 percent cobbles; mildly alkaline (pH 7.8); clear smooth boundary.

Bt2—6 to 10 inches; yellowish brown (10YR 5/4) very gravelly clay, dark yellowish brown (10YR 4/4) moist; strong medium prismatic structure parting to moderate fine angular blocky; very hard, firm, very sticky and very plastic; common very fine and fine roots; common fine tubular pores; many moderately thick clay films on faces of peds and lining pores and common moderately thick clay films coating coarse fragments; 35 percent pebbles and 10 percent cobbles; mildly alkaline (pH 7.8); abrupt smooth boundary.

Bt3—10 to 16 inches; brown (10YR 5/3) extremely gravelly clay, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; very hard, firm, very sticky and very plastic; few very fine and fine roots; common very fine and many fine tubular pores; common moderately thick clay films on faces of peds and coating coarse fragments; 50 percent pebbles and 15 percent cobbles; mildly alkaline (pH 7.6); clear wavy boundary.

Bt4—16 to 24 inches; light yellowish brown (10YR 6/4) extremely gravelly sandy clay, dark yellowish brown (10YR 4/4) moist; weak coarse subangular blocky structure; hard, friable, very sticky and very plastic; few very fine and fine roots; common fine tubular pores; common moderately thick clay films on faces of peds and coating coarse fragments; 45 percent pebbles and 20 percent cobbles; mildly alkaline (pH 7.6); clear wavy boundary.

C—24 to 60 inches; light yellowish brown (10YR 6/4) extremely gravelly sandy loam, yellowish brown (10YR 5/4) moist; massive; hard, friable, sticky and plastic; few very fine and fine roots; few fine tubular

pores; 55 percent pebbles and 20 percent cobbles; mildly alkaline (pH 7.8).

**Typical Pedon Location**

*Soil name and map unit in which located:* Pula very cobbly loam, 30 to 50 percent slopes, in Pula-Spike association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 28 miles north of Austin; 1,000 feet east and 2,600 feet south of the northwest corner of sec. 23, T. 23 N., R. 43 E.

**Range in Characteristics**

*Soil moisture content:* Usually dry, but moist in November through June

*Average annual soil temperature:* 47 to 51 degrees F

*Combined thickness of the A and Bt horizons:* 22 to 40 inches

*Reaction:* Slightly acid to mildly alkaline

*Control section:*

Content of clay—35 to 55 percent

Content of rock fragments—55 to 75 percent, mostly pebbles

*A horizon:*

Value—5 or 6 dry, 2 or 3 moist

Chroma—2 or 3

Structure—platy, granular, or subangular blocky

*Bt horizon:*

Hue—10YR or 7.5YR

Value—4 to 6 dry, 3 or 4 moist

Chroma—2, 3, 4, or 6

Texture—very gravelly or extremely gravelly clay, sandy clay, or clay loam

Structure—moderate or strong, fine or medium, and subangular blocky or prismatic

*C horizon:*

Value—5 to 8 dry, 4 to 6 moist

Chroma—2 to 4

**Punchbowl Series**

*Depth class:* Very shallow or shallow

*Drainage class:* Well drained

*Parent material:* Residuum derived from andesite, dacite, rhyolite, tuff, and some shale

*Positions on landscape:* Crests and side slopes of hills and mountains

*Slope:* 4 to 50 percent

*Mean annual precipitation:* About 9 inches

*Mean annual temperature:* About 45 degrees F

**Taxonomic class:** Loamy, mixed, frigid Lithic Xerollic Haplargids

### Typical Pedon

About 25 percent of the surface is covered with pebbles and 5 percent with cobbles.

A1—0 to 3 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, very friable, sticky and plastic; few very fine roots; many very fine vesicular pores; 10 percent pebbles; mildly alkaline (pH 7.8); abrupt smooth boundary.

A2—3 to 6 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; weak medium subangular blocky structure parting to moderate fine subangular blocky; slightly hard, friable, very sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine interstitial pores; 15 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Bt—6 to 10 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; hard, friable, very sticky and very plastic; common very fine and fine roots and few medium roots; common very fine tubular pores; common thin clay films on faces of peds and lining pores and few moderately thick clay films on faces of peds; 30 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); abrupt wavy boundary.

R—10 inches; fractured andesite; soft lime in fractures.

### Typical Pedon Location

*Soil name and map unit in which located:* Punchbowl loam, 15 to 30 percent slopes, in Punchbowl-Rock outcrop association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 25 miles east of Austin; about 600 feet south and 600 feet east of the northwest corner of sec. 4, T. 19 N., R. 47 E.

### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in mid-June to early in November

*Average annual soil temperature:* 45 to 47 degrees F

*Depth to bedrock:* 8 to 14 inches

*Reaction:* Neutral to moderately alkaline, increasing in alkalinity with increasing depth

#### Control section:

Content of clay—18 to 35 percent

Content of rock fragments—15 to 35 percent

#### A horizon:

Value—4 to 6 dry, 3 or 4 moist

Chroma—3 or 4

Effervescence—noneffervescent to strongly effervescent in the lower part

#### Bt horizon:

Hue—7.5YR or 10YR

Value—6 or 7 dry, 4 or 5 moist

Chroma—3 or 4

Texture—gravelly loam, gravelly sandy clay loam, or gravelly clay loam

Content of clay—25 to 35 percent

Content of rock fragments—25 to 35 percent, mostly pebbles

Effervescence—noneffervescent to strongly effervescent in the matrix

Other characteristics—very thin lime coatings on the underside of rock fragments or few soft lime segregations in the lower part in some pedons; few thin discontinuous colloid coatings common on rock fragments in some pedons

### Rasille Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Silty alluvium derived from loess and various kinds of rock

*Positions on landscape:* Beach terraces, inset fans, fan skirts

*Slope:* 0 to 2 percent

*Mean annual precipitation:* About 8 inches

*Mean annual temperature:* About 46 degrees F

**Taxonomic class:** Coarse-silty, mixed, mesic Durixerollic Camborthids

### Typical Pedon

A1—0 to 2 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine vesicular pores; mildly alkaline (pH 7.6); abrupt smooth boundary.

A2—2 to 6 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine tubular pores; mildly alkaline (pH 7.6); clear smooth boundary.

Bw—6 to 15 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine and fine roots and few medium roots; common very fine

tubular and interstitial pores; mildly alkaline (pH 7.8); clear wavy boundary.

**Bq**—15 to 24 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine and fine roots; common very fine tubular pores; 20 percent weakly cemented durinodes 5 to 15 millimeters in diameter; moderately alkaline (pH 8.2); clear wavy boundary.

**Bqk1**—24 to 33 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; 40 percent strongly cemented durinodes 5 to 15 millimeters in diameter; common fine lime filaments and threads; slightly effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

**Bqk2**—33 to 60 inches; very pale brown (10YR 7/3) very fine sandy loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; few very fine tubular pores; 25 percent weakly cemented durinodes 10 to 25 millimeters in diameter; few fine lime filaments and threads; slightly effervescent; strongly alkaline (pH 8.6).

#### Typical Pedon Location

*Soil name and map unit in which located:* Rasille silt loam, 0 to 2 percent slopes, in McConnel-Rasille-Wholan association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 22 miles east of Austin; in an unsectionalized area about 1,000 feet south and 1,000 feet east of the southwest corner of the assumed sec. 2, T. 19 N., R. 40 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in mid-June through October

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to carbonates:* 12 to 24 inches

*Depth to the Bq or Bqk horizon:* 12 to 24 inches

*Other characteristics:* Bq or Bqk horizon has 20 to 50 percent durinodes in a friable matrix

*Other characteristics:* Some pedons have gravelly strata below a depth of 40 inches

#### Control section:

Texture—silt loam or very fine sandy loam that is less than 15 percent fine sand or coarser textured material

Content of clay—10 to 18 percent

#### A horizon:

Value—6 or 7 dry, 3 or 4 moist

Chroma—2 or 3

Reaction—neutral or mildly alkaline

#### Bw horizon:

Chroma—3 or 4

Reaction—mildly alkaline or moderately alkaline

#### Bqk horizon:

Value—6 to 8 dry, 4 to 6 moist

Chroma—2 to 4

Reaction—moderately alkaline to very strongly alkaline

### Ravenswood Series

*Depth class:* Moderately deep

*Drainage class:* Well drained

*Parent material:* Colluvium and residuum derived from volcanic, metavolcanic, and metamorphic rock

*Positions on landscape:* Side slopes of mountains

*Slope:* 15 to 50 percent

*Mean annual precipitation:* About 14 inches

*Mean annual temperature:* About 42 degrees F

**Taxonomic class:** Clayey-skeletal, montmorillonitic, frigid Typic Argixerolls

#### Typical Pedon

About 65 percent of the surface is covered with pebbles, 10 percent with cobbles, and 3 percent with stones.

**A1**—0 to 3 inches; grayish brown (10YR 5/2) gravelly loam, dark brown (10YR 3/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine and fine vesicular pores; 15 percent pebbles and 5 percent cobbles; neutral (pH 7.2); abrupt smooth boundary.

**A2**—3 to 9 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; many very fine tubular pores; 10 percent pebbles; neutral (pH 7.2); clear smooth boundary.

**Bt1**—9 to 13 inches; brown (10YR 5/3) very gravelly clay loam, dark brown (10YR 3/3) moist; moderate medium angular blocky structure; slightly hard, friable, sticky and plastic; common fine and medium roots; common very fine tubular pores; many thin and common moderately thick clay films on faces of peds; 30 percent pebbles and 5 percent cobbles; mildly alkaline (pH 7.4); clear wavy boundary.



**Bt2**—13 to 29 inches; yellowish brown (10YR 5/4) very gravelly clay, dark yellowish brown (10YR 3/4) moist; strong medium angular blocky structure; hard, firm, very sticky and very plastic; few fine and medium roots; few very fine tubular pores; many moderately thick clay films in pores and on faces of pedis; 40 percent pebbles and 10 percent cobbles; mildly alkaline (pH 7.4); clear wavy boundary.

**Bt3**—29 to 36 inches; light yellowish brown (10YR 6/4) very gravelly clay, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to strong medium angular blocky; hard, firm, very sticky and very plastic; few coarse roots; few fine tubular pores; many pressure faces; 25 percent pebbles and 10 percent cobbles; mildly alkaline (pH 7.6); abrupt irregular boundary.

**R**—36 inches; fractured, welded tuff.

#### Typical Pedon Location

*Soil name and map unit in which located:* Ravenswood gravelly loam, 15 to 50 percent slopes, very stony, in Ravenswood-Itca-Walti association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 35 miles southwest of Austin; about 1,000 feet north and 500 feet east of the southwest corner of sec. 7, T. 15 N., R. 38 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry for 45 to 90 days consecutively in mid-July through October

*Average annual soil temperature:* 43 to 47 degrees F (more than 41 degrees from May through November)

*Thickness of the mollic epipedon:* 10 to 16 inches (includes the upper part of the argillic horizon)

*Thickness of the solum and depth to unweathered bedrock:* 30 to 40 inches

*Reaction:* Slightly acid to mildly alkaline, increasing in alkalinity with increasing depth

#### Control section:

Content of clay—35 to 50 percent

Content of rock fragments—35 to 60 percent, mainly pebbles and cobbles

#### A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3

#### Bt horizon:

Hue—10YR or 7.5YR

Value—5 dry in the upper part and 5 or 6 dry in the lower part, 3 moist in the upper part and 3 to 5 moist in the lower part

Chroma—3 in the upper part; 3, 4, or 6 in the lower part

Texture—very gravelly clay loam in the upper part, very gravelly clay or very gravelly clay loam in the lower part

Structure—angular blocky in the upper part, angular blocky or prismatic in the lower part

### Relley Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Mixed silty alluvium that is derived mainly from volcanic rock and includes some loess and volcanic ash

*Positions on landscape:* Fan skirts, inset fans

*Slope:* 0 to 2 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 49 degrees F

**Taxonomic class:** Fine-silty, mixed, mesic Duric Camborthids

#### Typical Pedon

**Ap**—0 to 4 inches; light gray (2.5Y 7/2) silt loam, dark grayish brown (2.5Y 4/2) moist; weak coarse and very coarse subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few very fine roots; many very fine vesicular and tubular pores; slightly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary.

**A**—4 to 8 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; moderate coarse prismatic structure parting to moderate thin and medium platy; slightly hard, very friable, slightly sticky and plastic; common very fine roots and few fine and medium roots; many very fine vesicular, interstitial, and tubular pores; slightly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

**Bw**—8 to 16 inches; very pale brown (10YR 7/3) silt loam, dark yellowish brown (10YR 4/4) moist; weak coarse prismatic structure; slightly hard, very friable, slightly sticky and plastic; common very fine roots; many very fine and few fine tubular pores; moderately alkaline (pH 8.4); clear wavy boundary.

**Bqk1**—16 to 21 inches; very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and plastic; common very fine and few fine roots; common very fine tubular pores; 25 percent weakly or strongly silica-cemented durinodes 5 to 40 millimeters in diameter; violently effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary.

**Bqk2**—21 to 28 inches; very pale brown (10YR 8/3) silt loam, light yellowish brown (10YR 6/4) moist; weak or moderate thin platy structure; slightly hard, friable, slightly sticky and plastic; common very fine and few fine roots; common very fine tubular pores; 10 percent weak durinodes; 40 percent discontinuous weak silica cementation; violently effervescent; many medium white (10YR 8/1, moist) and very pale brown (10YR 8/3, moist) coatings of lime on pedis; strongly alkaline (pH 8.6); clear wavy boundary.

**Bk1**—28 to 52 inches; very pale brown (10YR 7/3) silt loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; violently effervescent; common fine filaments or threads and small isolated pockets of lime; moderately alkaline (pH 8.4); abrupt wavy boundary.

**Bk2**—52 to 63 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 4/3) moist; common fine distinct brown (7.5YR 5/4) mottles, common fine faint dark brown (10YR 3/3) moist; massive; slightly hard, friable, slightly sticky and plastic; few very fine roots; many very fine tubular pores; violently effervescent; common fine filaments or threads of lime; moderately alkaline (pH 8.4).

#### Typical Pedon Location

*Map unit in which located:* Relley silt loam

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 52 miles southwest of Battle Mountain; about 660 feet south and 530 feet east of the northwest corner of sec. 12, T. 24 N., R. 40 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry late in May through November

*Average annual soil temperature:* 47 to 53 degrees F

*Content of clay in the control section:* 18 to 27 percent

*Depth to the Bqk horizon:* 11 to 24 inches

*Content of salt and sodium:* Generally moderately or strongly affected by salt and sodium at a depth of more than 30 inches

*Other characteristics:* Common, faint or distinct, relict mottles at a depth of more than 16 inches; volcanic ash layer 4 to 8 inches thick commonly at a depth of 16 to 45 inches; coarse sandy loam at a depth of more than 50 inches in some pedons

#### A horizon:

Value—6 or 7 dry, 3 or 4 moist

Consistence—slightly hard or hard (dry), very friable or friable (moist)

Reaction—moderately alkaline or strongly alkaline

#### Bw horizon:

Value—6 or 7 dry

Chroma—2 or 3 dry, 3 or 4 moist

Consistence—slightly hard or hard, very friable or friable

Reaction—moderately alkaline or strongly alkaline

#### Bq, Bk, or Bqk horizons (when present):

Value—5 to 8 dry, 4 to 6 moist

Chroma—2 to 4

Texture—dominantly silt loam, but strata of very fine sandy loam or silty clay loam in some pedons

Structure—platy or massive

Reaction—moderately alkaline to very strongly alkaline

Effervescence—strongly effervescent or violently effervescent

Other characteristics—20 to 50 percent weakly or strongly cemented durinodes; 4- to 7-inch-thick layer that has 30 to 50 percent discontinuous weak silica cementation, is hard and brittle, and commonly is at a depth of 16 to 34 inches; continuous, weakly or strongly cemented hardpan at a depth of more than 50 inches in some pedons

### Reluctant Series

*Depth class:* Moderately deep

*Drainage class:* Well drained

*Parent material:* Residuum and colluvium derived from rhyolite and other intrusive rock

*Positions on landscape:* Side slopes of mountains

*Slope:* 15 to 50 percent

*Mean annual precipitation:* About 12 inches

*Mean annual temperature:* About 44 degrees F

**Taxonomic class:** Fine-loamy, mixed, frigid Aridic Argixerolls

#### Typical Pedon

About 15 percent of the surface is covered with pebbles and 5 percent with cobbles.

**A1**—0 to 2 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak very thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine vesicular pores; 15 percent pebbles; neutral (pH 7.2); clear smooth boundary.

**A2**—2 to 13 inches; dark grayish brown (10YR 4/2) gravelly silt loam, very dark grayish brown (10YR 3/2) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine tubular pores; 15 percent pebbles;

mildly alkaline (pH 7.6); clear smooth boundary.

Bt1—13 to 23 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; common very fine tubular pores; few thin clay films on faces of peds and in pores; 15 percent pebbles; mildly alkaline (pH 7.6); clear smooth boundary.

Bt2—23 to 38 inches; light yellowish brown (10YR 6/4) gravelly loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, sticky and plastic; few very fine roots; common very fine tubular pores; 30 percent pebbles; mildly alkaline (pH 7.6); abrupt wavy boundary.

2R—38 inches; rhyolitic tuff.

### Typical Pedon Location

*Soil name and map unit in which located:* Reluctan gravelly loam, 15 to 30 percent slopes, in Millerlux-Reluctan-Cleavage association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; near Maysville Summit, about 14 miles southeast of Battle Mountain; about 2,000 feet south and 500 feet west of the northeast corner of sec. 7, T. 29 N., R. 46 E.

### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in July through October

*Average annual soil temperature:* 44 to 47 degrees F

*Thickness of the mollic epipedon:* 7 to 17 inches (commonly includes part of the argillic horizon)

*Thickness of the solum:* 20 to 40 inches

*Depth to bedrock:* 20 to 40 inches

#### A horizon:

Value—4 or 5 dry

Chroma—2 or 3

Reaction—neutral or mildly alkaline

#### Bt horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4

Texture—gravelly loam or gravelly clay loam

Content of clay—25 to 35 percent

Content of rock fragments—15 to 35 percent, mainly pebbles

Reaction—neutral or mildly alkaline, commonly increasing in alkalinity with increasing depth

### Ricert Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Thin loess deposits over alluvium derived from various kinds of rock

*Positions on landscape:* Fan piedmonts

*Slope:* 2 to 15 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 48 degrees F

**Taxonomic class:** Fine-loamy, mixed, mesic Duric Natrargids

### Typical Pedon

About 90 percent of the surface is covered with pebbles.

A1—0 to 4 inches; pale brown (10YR 6/3) very gravelly very fine sandy loam, brown (10YR 4/3) moist; moderate very thin platy structure; soft, very friable, nonsticky and nonplastic; few fine and medium roots; many very fine interstitial pores and few fine and medium vesicular pores; 35 percent pebbles; moderately alkaline (pH 8.2); clear smooth boundary.

A2—4 to 7 inches; pale brown (10YR 6/3) gravelly very fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; common very fine and fine roots and few medium roots; common very fine and few fine and medium tubular pores; 25 percent pebbles; moderately alkaline (pH 8.4); clear smooth boundary.

Btn—7 to 11 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, firm, sticky and plastic; many fine roots and few very fine and medium roots; common very fine and few fine interstitial pores and few very fine and medium tubular pores; 5 percent pebbles; common moderately thick clay films on faces of peds; strongly alkaline (pH 8.8); clear wavy boundary.

Btnk—11 to 14 inches; yellowish brown (10YR 5/6) loam, dark yellowish brown (10YR 4/6) moist; weak medium prismatic structure parting to moderate fine subangular blocky; slightly hard, friable, sticky and slightly plastic; common very fine and fine roots and few medium roots; common fine and few very fine and medium tubular pores; common thin clay films on faces of peds; 10 percent pebbles; few fine lime filaments or threads; strongly effervescent; strongly alkaline (pH 9.0); abrupt wavy boundary.

Bqk—14 to 20 inches; very pale brown (10YR 7/4) loam, yellowish brown (10YR 5/6) moist; massive; hard, firm, nonsticky and nonplastic; few fine and medium roots; few fine tubular pores; 15 percent pebbles; continuous weak silica cementation;

common fine lime filaments or threads; violently effervescent; strongly alkaline (pH 9.0); clear wavy boundary.

**2Bk1**—20 to 31 inches; very pale brown (10YR 7/4) very gravelly sandy loam, yellowish brown (10YR 5/6) moist; massive; soft, very friable, nonsticky and nonplastic; many fine interstitial pores; 35 percent pebbles and 10 percent cobbles; common fine lime filaments or threads and lime coatings on the underside of pebbles; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary.

**2Bk2**—31 to 60 inches; very pale brown (10YR 8/4) very gravelly sandy loam, light yellowish brown (10YR 6/4) moist; massive; soft, very friable, nonsticky and nonplastic; many fine interstitial pores; 25 percent pebbles and 10 percent cobbles; common fine lime filaments or threads and lime coatings on the underside of pebbles; violently effervescent; strongly alkaline (pH 8.8).

#### Typical Pedon Location

*Soil name and map unit in which located:* Ricert very gravelly very fine sandy loam, 2 to 4 percent slopes, in Ricert-Orovada-Broyles association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 17 miles southwest of Austin; about 2,000 feet north and 1,300 feet east of the southwest corner of sec. 3, T. 17 N., R. 41 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in mid-May through November

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to the Bqk horizon:* 14 to 25 inches

*Depth to the 2Bk horizon:* 20 to 40 inches

#### Control section:

Content of clay—25 to 35 percent

Content of rock fragments—0 to 10 percent, mainly pebbles

#### A horizon:

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 to 4

#### Btn and Btnk horizons:

Hue—10YR or 7.5YR

Value—5 or 6 dry, 4 or 5 moist

Chroma—3, 4, or 6

Texture—loam or clay loam

Reaction—strongly alkaline or very strongly alkaline

Exchangeable sodium percentage—15 to 35

#### Bqk horizon:

Value—6 or 7 dry, 4 or 5 moist

Chroma—3, 4, or 6

Texture—loam, silt loam, or clay loam

Reaction—strongly alkaline or very strongly alkaline

#### 2Bk and 2Bky horizons (when present):

Texture—dominantly very gravelly sandy loam, very gravelly loamy sand, or extremely gravelly loamy sand, but strata of coarse sand in some pedons

Content of rock fragments—30 to 70 percent, mainly pebbles, commonly increasing with increasing depth

Reaction—strongly alkaline or very strongly alkaline

Other characteristics—gypsum absent in many pedons

### Robson Series

*Depth class:* Shallow

*Drainage class:* Well drained

*Parent material:* Residuum derived from igneous rock

*Positions on landscape:* Crests and side slopes of hills and mountains

*Slope:* 8 to 30 percent

*Mean annual precipitation:* About 15 inches

*Mean annual temperature:* About 43 degrees F

**Taxonomic class:** Clayey-skeletal, montmorillonitic, frigid Lithic Xerollic Haplargids

#### Typical Pedon

About 30 percent of the surface is covered with pebbles and 50 percent with cobbles and stones.

**A**—0 to 2 inches; grayish brown (10YR 5/2) very cobbly loam, dark brown (10YR 3/3) moist; moderate thin platy structure parting to moderate fine granular; soft, very friable, slightly sticky and nonplastic; common very fine and fine roots; common very fine and fine vesicular pores; 10 percent pebbles, 40 percent cobbles, and 5 percent stones; neutral (pH 6.8); abrupt smooth boundary.

**Bt1**—2 to 5 inches; pale brown (10YR 6/3) very cobbly clay loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine interstitial pores; few fine clay films on faces of peds; 10 percent pebbles and 35 percent cobbles; mildly alkaline (pH 7.6); abrupt smooth boundary.

**Bt2**—5 to 15 inches; pale brown (10YR 6/3) very cobbly clay, dark brown (10YR 4/3) moist; strong medium and coarse angular blocky structure; hard, firm, very sticky and very plastic; few very fine roots; common very fine tubular pores; many moderately thick clay films on faces of peds and lining pores; 20 percent

pebbles and 35 percent cobbles; mildly alkaline (pH 7.8); clear irregular boundary.

R—15 inches; fractured andesite.

#### Typical Pedon Location

*Soil name and map unit in which located:* Robson very cobbly loam, 15 to 30 percent slopes, in Zoesta-Robson-Softscrabble association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 1,500 feet east and 750 north of the southwest corner of sec. 29, T. 20 N., R. 47 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry late in June through October

*Average annual soil temperature:* 44 to 47 degrees F

*Depth to bedrock:* 12 to 20 inches

#### Control section:

Content of clay—40 to 50 percent

Content of rock fragments—50 to 75 percent when mixed, mainly cobbles

#### A horizon:

Hue—7.5YR or 10YR

Value—5 or 6 dry (value of 5.5 dry occurs when the upper 7 inches is mixed); 3 or 4 moist

Chroma—2 or 3

Structure—very thin or thin and platy, or very fine to medium and subangular blocky or granular

#### Bt horizon:

Hue—7.5YR or 10YR

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4

Structure—weak to strong, very fine to coarse, and prismatic, subangular blocky, or angular blocky

Reaction—neutral or mildly alkaline

Other characteristics—the upper few inches of bedrock commonly fractured into angular, cobble- or pebble-sized fragments

### Roca Series

*Depth class:* Moderately deep

*Drainage class:* Well drained

*Parent material:* Residuum and colluvium derived from shale and chert

*Positions on landscape:* Side slopes of mountains

*Slope:* 15 to 50 percent

*Mean annual precipitation:* About 10 inches

*Mean annual temperature:* About 43 degrees F

**Taxonomic class:** Clayey-skeletal, montmorillonitic, frigid Xerollic Haplargids

#### Typical Pedon

About 45 percent of the surface is covered with pebbles.

A—0 to 5 inches; light brownish gray (10YR 6/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate thin and medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and common fine roots; many very fine tubular pores and common very fine vesicular pores; 40 percent pebbles and 1 percent cobbles; neutral (pH 7.2); clear smooth boundary.

Bt1—5 to 10 inches; pale brown (10YR 6/3) very gravelly clay loam, dark brown (10YR 3/3) moist; weak very fine and fine subangular blocky structure; slightly hard, friable, sticky and plastic; many very fine and common fine roots; many very fine tubular pores; 35 percent pebbles; mildly alkaline (pH 7.4); clear smooth boundary.

Bt2—10 to 18 inches; yellowish brown (10YR 5/4) very gravelly clay, brown (10YR 4/3) moist; strong very fine and fine angular blocky structure; hard, firm, sticky and plastic; common very fine and few fine roots; many very fine tubular pores; continuous moderately thick clay films on faces of peds and lining pores; 50 percent pebbles; mildly alkaline (pH 7.4); gradual wavy boundary.

Bt3—18 to 27 inches; light yellowish brown (10YR 6/4) very gravelly clay, dark yellowish brown (10YR 4/4) moist; strong very fine and fine angular blocky structure; hard, firm, sticky and plastic; common very fine roots; many very fine tubular pores; continuous moderately thick clay films on faces of peds and lining pores; 50 percent pebbles; mildly alkaline (pH 7.8); abrupt wavy boundary.

R—27 inches; fractured chert.

#### Typical Pedon Location

*Soil name and map unit in which located:* Roca very gravelly loam, 30 to 50 percent slopes, in Roca-Linrose-Wiskan association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 15 miles southeast of Battle Mountain; about 1,000 feet south and 2,000 feet east of the northwest corner of sec. 24, T. 30 N., R. 46 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry late in June to early in November

*Average annual soil temperature:* 43 to 47 degrees F

*Depth to bedrock:* 20 to 40 inches

#### A horizon:

Hue—10YR or 2.5Y

Value—5 or 6 dry, 3 or 4 moist  
 Chroma—2 or 3  
 Structure—granular or platy  
 Reaction—slightly acid or mildly alkaline

**Bt horizon:**

Hue—dominantly 10YR or 7.5YR, but 2.5Y common  
 in the lower part in some pedons  
 Value—5 to 7 dry, 3 to 7 moist  
 Chroma—3 to 6  
 Texture—very gravelly clay or very gravelly clay  
 loam  
 Content of clay—35 to 50 percent  
 Content of rock fragments—35 to 50 percent,  
 mainly pebbles  
 Structure—moderate or strong, medium or fine, and  
 angular blocky or subangular blocky  
 Reaction—neutral to moderately alkaline, commonly  
 increasing in alkalinity with increasing depth  
 Other characteristics—contains lime and is violently  
 effervescent in the lower part in some pedons

**Rotinom Series**

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Loess and alluvium that is derived from  
 various kinds of rock and includes some volcanic  
 ash

*Positions on landscape:* Stream terraces

*Slope:* 0 to 2 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 45 degrees F

**Taxonomic class:** Fine-silty, mixed (calcareous), mesic  
 Durorthidic Torrifuvents

**Typical Pedon**

A1—0 to 2 inches; pale brown (10YR 6/3) silt loam,  
 yellowish brown (10YR 5/4) moist; strong thin and  
 medium platy structure; slightly hard, friable, sticky  
 and plastic; few fine and very fine roots; many very  
 fine and fine vesicular pores; strongly effervescent;  
 moderately alkaline (pH 8.2); abrupt smooth  
 boundary.

A2—2 to 4 inches; pale brown (10YR 6/3) silt loam,  
 yellowish brown (10YR 5/4) moist; strong thick platy  
 structure; slightly hard, friable, sticky and plastic;  
 few very fine and fine roots; many very fine and fine  
 vesicular pores; strongly effervescent; moderately  
 alkaline (pH 8.2); abrupt smooth boundary.

A3—4 to 9 inches; pale brown (10YR 6/3) silt loam,  
 yellowish brown (10YR 5/4) moist; strong thin platy  
 structure; slightly hard, friable, sticky and plastic;

few very fine and common fine roots; many very  
 fine and few fine vesicular pores; strongly  
 effervescent; strongly alkaline (pH 8.6); abrupt  
 smooth boundary.

Bk—9 to 13 inches; pale brown (10YR 6/3) silt loam,  
 yellowish brown (10YR 5/4) moist; moderate  
 medium platy structure; soft, very friable, slightly  
 sticky and plastic; few very fine and common fine  
 roots; common very fine and fine tubular pores; few  
 fine and medium lime coatings on plates; strongly  
 effervescent; strongly alkaline (pH 8.6); clear  
 smooth boundary.

2Bqk1—13 to 16 inches; white and pale brown (10YR  
 8/2 and 6/3) silt loam, light brownish gray and  
 yellowish brown (10YR 6/2 and 5/4) moist; strong  
 thin platy structure; soft, very friable, slightly sticky  
 and plastic; few very fine and common fine roots;  
 common very fine and fine tubular pores; banded  
 lenses of lighter colored volcanic ash; 50 percent  
 hard, firm and brittle, discontinuous, weak, silica  
 cementation; common medium lime coatings on  
 plates; strongly effervescent; moderately alkaline  
 (pH 8.4); abrupt smooth boundary.

2Bqk2—16 to 24 inches; pale brown (10YR 6/3) silt  
 loam, yellowish brown (10YR 5/4) moist; moderate  
 thin platy structure; slightly hard, friable, slightly  
 sticky and plastic; few very fine and common fine  
 roots; few medium and common very fine and fine  
 tubular pores; thin discontinuous lenses of ash; 60  
 percent hard, firm and brittle, discontinuous, weak,  
 silica cementation; many medium lime coatings on  
 plates; strongly effervescent; moderately alkaline  
 (pH 8.4); clear wavy boundary.

3Ak1—24 to 32 inches; gray (10YR 5/1) silty clay  
 loam, very dark gray (10YR 3/1) moist; strong fine  
 angular blocky structure; slightly hard, friable,  
 slightly sticky and plastic; common very fine roots;  
 few medium and common very fine and fine tubular  
 pores; continuous thin silica coatings on faces of  
 peds; common fine and medium lime filaments;  
 strongly effervescent; moderately alkaline (pH 8.4);  
 clear wavy boundary.

3Ak2—32 to 40 inches; light gray (10YR 6/1) silty clay  
 loam, very dark grayish brown (10YR 3/2) moist;  
 moderate medium subangular blocky structure;  
 slightly hard, friable, slightly sticky and plastic; few  
 very fine and fine roots; few very fine and fine  
 tubular pores; silica bridges between sand grains;  
 common fine lime filaments; strongly effervescent;  
 moderately alkaline (pH 8.4); clear wavy boundary.

3Ck1—40 to 49 inches; gray (5Y 6/1) sandy loam, olive  
 gray (5Y 4/2) moist; common fine distinct yellowish  
 brown (10YR 5/6) relict mottles, dark yellowish  
 brown (10YR 3/6) moist; massive; slightly hard,

friable, slightly sticky and plastic; few very fine and fine roots; few very fine and fine tubular pores; few fine lime filaments; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

- 3Ck2—49 to 65 inches; gray (10YR 6/1) sandy loam, olive gray (5Y 4/2) moist; common medium distinct yellowish brown (10YR 5/6) relict mottles, dark yellowish brown (10YR 4/6) moist, and few fine prominent yellowish red (5YR 5/6) relict mottles, dark reddish brown (5YR 3/4) moist; massive; hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; few very fine and fine tubular pores; common fine manganese coatings and concretions; common fine lime filaments; strongly effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary.
- 4C—65 to 69 inches; gray (5Y 6/1) extremely gravelly coarse sand, olive gray (5Y 4/2) moist; single grain; loose, nonsticky and nonplastic; 65 percent pebbles; common fine lime filaments on pebbles; strongly effervescent; moderately alkaline (pH 8.4).

#### Typical Pedon Location

*Soil name and map unit in which located:* Rotinom silt loam, 0 to 2 percent slopes, in Rotinom-Wholan association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 22 miles southeast of Austin, in the Monitor Valley, 1.8 miles south and 0.4 mile west of an isolated windmill; in an unsectionalized area about 1.5 miles east and 2.8 miles north of the southwest corner of the assumed sec. 31, T. 17 N., R. 47 E.

#### Range in Characteristics

*Soil moisture content:* Moist in some part from November to early in May; dry late in May through October

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to the buried A horizon:* 20 to 35 inches

*Other characteristics:* 20 to 60 percent discontinuous silica cementation at a depth of 10 to 20 inches; relict mottles at a depth of more than 40 inches in some pedons

*Reaction:* Moderately alkaline or strongly alkaline

#### Control section:

Content of clay—18 to 27 percent

Content of sand—less than 15 percent particles coarser than very fine sand

Content of rock fragments—as much as 5 percent in some horizons

#### A horizon:

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 to 4

Effervescence—noneffervescent to strongly effervescent

#### Bk and Bqk horizons:

Hue—10YR, 2.5Y, or 5Y

Value—5 to 8 dry, 3 to 5 moist

Chroma—1 to 4

Texture—dominantly silt loam, but strata of silty clay loam common in most pedons and very thin lenses of loam, very fine sandy loam, or sandy clay loam in some pedons

Effervescence (matrix)—slightly effervescent to violently effervescent

Other characteristics—lime filaments, threads, or soft masses present

### Rutab Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Alluvium derived from various kinds of rock

*Positions on landscape:* Fan skirts, stream terraces

*Slope:* 0 to 2 percent

*Mean annual precipitation:* About 10 inches

*Mean annual temperature:* About 45 degrees F

*Taxonomic class:* Loamy-skeletal, mixed, frigid Xerollic Camborthids

#### Typical Pedon

About 5 percent of the surface is covered with pebbles.

A1—0 to 3 inches; pale brown (10YR 6/3) loam, dark brown (10YR 4/3) moist; moderate medium platy structure; soft, friable, nonsticky and nonplastic; few very fine and fine roots; many very fine and few fine vesicular pores; neutral (pH 7.2); abrupt smooth boundary.

A2—3 to 5 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; few very fine tubular pores; 5 percent pebbles; mildly alkaline (pH 7.4); abrupt smooth boundary.

Bw1—5 to 8 inches; pale brown (10YR 6/3) loam, dark brown (10YR 4/3) moist; weak medium and moderate fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine and fine interstitial pores and few very fine tubular pores; 5 percent pebbles; mildly alkaline (pH 7.6); clear wavy boundary.

Bw2—8 to 16 inches; pale brown (10YR 6/3) loam, dark

brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine tubular and interstitial pores; 5 percent pebbles; mildly alkaline (pH 7.6); clear wavy boundary.

2Bw3—16 to 21 inches; pale brown (10YR 6/3) gravelly loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine interstitial pores; 15 percent moderate or strong durinodes 10 to 30 millimeters in diameter; 20 percent pebbles; mildly alkaline (pH 7.8); gradual wavy boundary.

3C—21 to 60 inches; pale brown (10YR 6/3) extremely gravelly sandy loam, dark brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; common very fine and few fine roots; many fine interstitial pores; 50 percent pebbles and 10 percent cobbles; few thin slightly effervescent lime coatings on the underside of rock fragments; noneffervescent in matrix; mildly alkaline (pH 7.8).

#### Typical Pedon Location

*Map unit in which located:* Rutab loam, 0 to 2 percent slopes

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 24 miles east of Austin; about 1,000 feet south and 1,000 feet west of the northeast corner of sec. 20, T. 19 N., R. 47 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and early in spring, dry in mid-June through October

*Average annual soil temperature:* 45 to 47 degrees F

*Combined thickness of the A and Bw horizons:* 13 to 23 inches

#### Control section:

Content of clay—5 to 18 percent

Content of rock fragments—35 to 60 percent

#### A horizon:

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3

Consistence—soft or slightly hard (dry)

Reaction—neutral or mildly alkaline

#### Bw horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4

Texture—loam or gravelly loam

#### 2Bw horizon:

Texture—very gravelly sandy loam or very gravelly loam

Content of rock fragments—35 to 50 percent, mainly pebbles

Structure—subangular blocky or massive

Content of durinodes: As much as 15 percent in some pedons

#### 3C horizon:

Value—6 or 7 dry, 3 or 4 moist

Chroma—3 or 4

Texture—extremely gravelly loamy sand, extremely gravelly sandy loam, or very gravelly sandy loam

Content of rock fragments—35 to 70 percent, mainly pebbles

Other characteristics—5 to 10 percent durinodes that commonly are very hard, firm, and brittle present in some pedons

### Settlemeier Series

*Depth class:* Very deep

*Drainage class:* Poorly drained

*Parent material:* Alluvium derived from various kinds of rock

*Positions on landscape:* Flood plains, inset fans

*Slope:* 0 to 4 percent

*Mean annual precipitation:* About 9 inches

*Mean annual temperature:* About 45 degrees F

**Taxonomic class:** Fine-loamy, mixed, mesic Fluvaquentic Haplaquolls

#### Typical Pedon

A1—0 to 5 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 3/3) moist; moderate very thin and thin platy structure; slightly hard, friable, nonsticky and nonplastic; common very fine and fine roots; common fine vesicular pores; mildly alkaline (pH 7.7); clear smooth boundary.

A2—5 to 10 inches; grayish brown (10YR 5/2) sandy loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; slightly hard, friable, nonsticky and nonplastic; common very fine and fine roots and few medium roots; common very fine and fine interstitial pores; mildly alkaline (pH 7.8); clear smooth boundary.

A3—10 to 16 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; common medium faint mottles that are dark grayish brown (10YR 4/2) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; common worm casts; moderately alkaline (pH 7.9); clear smooth boundary.



**AC**—16 to 24 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; common medium distinct mottles that are yellowish brown (10YR 5/4) and very dark brown (10YR 2/2) moist; weak medium angular blocky structure; slightly hard, friable, very sticky and plastic; common very fine and fine roots; common very fine tubular pores; common fine slightly effervescent lime filaments; noneffervescent in matrix; moderately alkaline (pH 8.0); clear smooth boundary.

**C1**—24 to 36 inches; brown (10YR 5/3) silt loam, dark brown (10YR 4/3) moist; few fine distinct mottles that are dark brown (7.5YR 4/4) and gray (2.5Y 5/0) moist; massive; slightly hard, friable, sticky and plastic; common very fine roots; common very fine tubular pores; few fine slightly effervescent lime seams; noneffervescent in matrix; moderately alkaline (pH 8.0); gradual smooth boundary.

**2C2**—36 to 65 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 4/3) moist; few fine distinct mottles that are dark brown (7.5YR 4/4) and gray (2.5Y 5/0) moist; massive; slightly hard, friable, sticky and plastic; few very fine roots; common very fine tubular pores; mildly alkaline (pH 7.8).

#### Typical Pedon Location

*Map unit in which located:* Settlemyer fine sandy loam, drained, 0 to 4 percent slopes

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 32 miles southwest of Battle Mountain; about 900 feet east and 2,550 feet south of the northwest corner of sec. 7, T. 27 N., R. 42 E.

#### Range in Characteristics

*Soil moisture content:* Dry in midsummer to early in fall, moist late in fall to early in summer

*Depth to an apparent seasonal high water table:*

Commonly 12 to 36 inches in winter and spring, but some areas have been drained

*Average annual soil temperature:* 47 to 52 degrees F

*Thickness of the mollic epipedon:* 12 to 24 inches

*Reaction:* Neutral to very strongly alkaline (higher reaction only in sodium-affected pedons)

*Other characteristics:* O horizon that consists of as much as 6 inches of mainly undecomposed plant material present at top

*Control section:*

Texture—stratified clay, silty clay, silty clay loam, clay loam, loam, silt loam, or very fine sandy loam

Content of clay—25 to 35 percent when mixed

Content of fine sand or coarser fragments—15 to 30 percent

#### A and AC horizons:

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3

Structure—weak to strong, fine or medium, and prismatic, angular blocky, subangular blocky, or granular; weak to strong, very thin to medium, and platy; or massive

Consistence—slightly hard or hard (dry)

Effervescence—noneffervescent or slightly effervescent in the upper part of the A horizon, but noneffervescent between depths of 10 and 20 inches

#### C horizon:

Hue—10YR, 2.5Y, or 5Y

Value—5 or 6 dry, 3 or 4 moist

Chroma—1 to 3

Structure—weak, medium or fine, and angular blocky, or massive

Consistence—slightly hard or hard (dry)

Other characteristics—distinct or prominent iron mottles that have reddish, greenish, or yellowish hue and chroma of 1 to 4 are present; base color indicative of gleying present in matrix; few lime concretions 0.25 to 0.75 inch in diameter

#### 2C horizon:

Effervescence: Noneffervescent or slightly effervescent

### Shagnasty Series

*Depth class:* Deep or very deep

*Drainage class:* Well drained

*Parent material:* Residuum and colluvium derived from rhyolite, andesite, and quartzite

*Positions on landscape:* Side slopes of mountains

*Slope:* 15 to 50 percent

*Mean annual precipitation:* About 14 inches

*Mean annual temperature:* About 44 degrees F

**Taxonomic class:** Fine, montmorillonitic, frigid Typic Argixerolls

#### Typical Pedon

About 15 percent of the surface is covered with pebbles, 30 percent with cobbles, and 40 percent with stones.

**O**—1 inch to 0; partially decomposed plant litter.

**A1**—0 to 3 inches; grayish brown (10YR 5/2) very cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine and fine roots; common very fine vesicular pores; 10 percent pebbles and 30 percent cobbles

and stones; neutral (pH 7.2); abrupt smooth boundary.

A2—3 to 10 inches; brown (10YR 5/3) cobbly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, sticky and plastic; common very fine, fine, and medium roots; common very fine and fine tubular pores; 10 percent pebbles and 10 percent cobbles; neutral (pH 7.2); clear smooth boundary.

Bt1—10 to 15 inches; brown (10YR 5/3) gravelly clay loam, dark brown (10YR 3/3) moist; strong medium angular blocky structure; hard, friable, very sticky and plastic; few fine and medium roots; few very fine tubular pores; many thin and few moderately thick clay films on faces of peds; 15 percent pebbles and 5 percent cobbles; neutral (pH 7.2); clear wavy boundary.

Bt2—15 to 27 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 3/4) moist; strong medium angular blocky structure; hard, friable, very sticky and very plastic; few fine, medium, and coarse roots; few very fine tubular pores; common moderately thick clay films lining pores and on faces of peds; 10 percent pebbles; neutral (pH 7.2); clear wavy boundary.

Bt3—27 to 36 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 3/4) moist; moderate medium prismatic structure; hard, friable, very sticky and very plastic; few medium and coarse roots; few very fine tubular pores; many thick pressure faces; 10 percent pebbles; neutral (pH 7.2); clear wavy boundary.

Bt4—36 to 44 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; strong medium angular blocky structure; hard, firm, very sticky and very plastic; few medium and coarse roots; few fine tubular pores; common moderately thick clay films lining pores and on faces of peds; 25 percent pebbles and 5 percent cobbles; mildly alkaline (pH 7.4); gradual wavy boundary.

Bt5—44 to 57 inches; light yellowish brown (10YR 6/4) cobbly clay loam, dark yellowish brown (10YR 4/4) moist; strong medium angular blocky structure; hard, firm, very sticky and very plastic; few medium roots; common moderately thick clay films lining pores and on faces of peds; 10 percent pebbles and 20 percent cobbles; mildly alkaline (pH 7.4); clear wavy boundary.

Cr—57 inches; weathered rhyolite.

#### Typical Pedon Location

*Soil name and map unit in which located:* Shagnasty very cobbly loam, 30 to 50 percent slopes, rubbly, in Shagnasty-Softscrabble association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 29 miles east of Austin; about 100 feet north and 800 feet east of the southwest corner of sec. 3, T. 20 N., R. 47 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter to early in summer, dry in mid-July through October

*Average annual soil temperature:* 44 to 46 degrees F

*Thickness of the mollic epipedon:* 10 to 16 inches (includes the upper part of the argillic horizon)

*Depth to the base of the Bt horizon:* 40 to more than 60 inches

*Depth to weathered bedrock:* 50 to 80 inches

*Reaction:* Slightly acid to mildly alkaline

*Other characteristics:* Lime below a depth of 40 inches in some pedons, lithologic discontinuity absent in some pedons

*Control section:*

Content of clay—35 to 50 percent

Content of rock fragments—5 to 15 percent when mixed

*A horizon:*

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3

*Bt horizon:*

Hue—7.5YR or 10YR

Value—4 to 6 dry, 3 to 5 moist

Chroma—3 or 4 in the upper part, 4 to 6 in the lower part

Structure—dominantly prismatic or angular blocky, but massive in the lower part in some pedons

#### Shipley Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Alluvium that is derived from various kinds of rock and includes some loess and volcanic ash

*Positions on landscape:* Inset fans

*Slope:* 0 to 2 percent

*Mean annual precipitation:* About 9 inches

*Mean annual temperature:* About 43 degrees F

**Taxonomic class:** Coarse-loamy, mixed (calcareous), frigid Xeric Torriorthents

#### Typical Pedon

About 5 percent of the surface is covered with pebbles.

A1—0 to 3 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; moderate medium platy structure; hard, friable, slightly sticky and

slightly plastic; few very fine roots; many fine and medium vesicular pores; slightly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

- A2—3 to 5 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; moderate thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine tubular pores; slightly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.
- C1—5 to 11 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and few fine tubular pores; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.
- C2—11 to 30 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine interstitial and tubular pores; violently effervescent; moderately alkaline (pH 8.2); clear wavy boundary.
- Ck1—30 to 41 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine interstitial and tubular pores; 10 percent pebbles; common medium lime filaments; violently effervescent; moderately alkaline (pH 8.2); clear wavy boundary.
- 2Ck2—41 to 60 inches; pale brown (10YR 6/3) extremely gravelly sand, dark brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; many very fine and fine interstitial pores; 45 percent pebbles and 20 percent cobbles; common thin lime coatings on the underside of rock fragments; violently effervescent; moderately alkaline (pH 8.2).

#### Typical Pedon Location

*Map unit in which located:* Shipley silt loam, occasionally flooded, 0 to 2 percent slopes

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 23 miles southeast of Austin; about 1,800 feet south and 2,000 feet west of the northeast corner of sec. 3, T. 16 N., R. 47 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in June through October

*Average annual soil temperature:* 45 to 47 degrees F

*Reaction:* Moderately alkaline to very strongly alkaline  
*Other characteristics:* Thin strata of sand or gravel at a depth of more than 40 inches in some pedons, gravelly in the lower part in some pedons

#### Control section:

Content of clay—8 to 18 percent

Content of rock fragments—dominantly nongravelly, but as much as 35 percent gravel in individual strata

#### A horizon:

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3

Structure—strong or moderate, very thin to medium, and platy, or massive

Consistence—soft to hard (dry), very friable or friable (moist)

#### C horizon:

Value—6 to 8 dry, 4 to 6 moist

Chroma—2 or 3

Texture—dominantly silt loam, fine sandy loam, or very fine sandy loam, but thin strata of loam or sandy loam in some pedons

Structure—weak and platy or subangular blocky, or massive

Consistence—soft or slightly hard (dry)

Other characteristics—as much as 20 percent slightly hard or hard, brittle durinodes 0.5 to 1.0 inch in diameter at a depth of more than 15 inches in some pedons; few fine or medium lime segregations at a depth of more than 24 inches

### Silverado Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Alluvium that is derived from various kinds of rock and includes some volcanic ash

*Positions on landscape:* Inset fans

*Slope:* 0 to 8 percent

*Mean annual precipitation:* About 9 inches

*Mean annual temperature:* About 44 degrees F

**Taxonomic class:** Coarse-loamy, mixed, frigid Durixerollic Camborthids

#### Typical Pedon

A1—0 to 4 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; many fine and very fine interstitial pores; 5 percent pebbles; slightly acid (pH 6.2); abrupt smooth boundary.

A2—4 to 6 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; weak fine and very fine

subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common fine and very fine roots; common fine and very fine interstitial pores; 5 percent pebbles; slightly acid (pH 6.2); clear wavy boundary.

**Bw**—6 to 14 inches; brownish gray (10YR 6/2) sandy loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few fine and very fine roots; common fine and very fine interstitial pores; 5 percent pebbles; slightly acid (pH 6.2); clear wavy boundary.

**Bq**—14 to 26 inches; very pale brown (10YR 7/3) gravelly sandy loam, brown (10YR 5/3) moist; massive; hard, firm, nonsticky and nonplastic; few fine and very fine roots; common fine and very fine interstitial pores; continuously weakly cemented with common very thin silica bridges and few very thin discontinuous silica laminae; 20 percent pebbles; neutral (pH 7.0); gradual wavy boundary.

**Bqk1**—26 to 35 inches; white (10YR 8/1) gravelly sandy loam, very pale brown (10YR 7/3) moist; massive; very hard, very firm, nonsticky and nonplastic; few fine roots; common fine and very fine interstitial pores; continuously weakly cemented with common thin discontinuous silica and lime laminae; 20 percent pebbles; violently effervescent; moderately alkaline (pH 8.2); abrupt wavy boundary.

**2Bqk2**—35 to 60 inches; light gray (10YR 7/2) very gravelly coarse sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; many fine and very fine interstitial pores; few discontinuous thin strongly cemented and common weakly cemented silica and lime laminae; 50 percent pebbles; violently effervescent; strongly alkaline (pH 9.0).

#### Typical Pedon Location

*Map unit in which located:* Silverado sandy loam, 0 to 2 percent slopes

*Location in Nevada:* Eureka County Area, Nevada, survey area; about 20 miles west of Eureka; about 300 feet west and 1,100 feet south of the northeast corner of sec. 10, T. 19 N., R. 50 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in June through October

*Average annual soil temperature:* 45 to 47 degrees F

*Depth to the Bq horizon:* 10 to 25 inches

*Depth to the 2Bqk horizon:* 30 to 40 inches

*Control section:*

Content of clay—5 to 15 percent

Content of rock fragments—10 to 30 percent pebbles when mixed

*A horizon:*

Value—5 or 6 dry and 3 or 4 moist (value of more than 5.5 dry and 3.5 moist occurs when the upper 7 inches is mixed)

Chroma—2 or 3

Reaction—slightly acid to mildly alkaline

Structure—granular, platy, or massive

*Bw horizon:*

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3

Content of rock fragments—0 to 15 percent

Reaction—slightly acid to mildly alkaline

*Bq and Bqk horizons:*

Value—6 to 8 dry, 4 to 7 moist

Chroma—1 to 3

Texture—sandy loam or gravelly sandy loam

Reaction—neutral to moderately alkaline

Other characteristics—continuous weak silica cementation and few or common very thin discontinuous horizontal and vertical silica laminae; strata that are not continuously cemented have durinodes or common pendants on rock fragments in the noncemented part

*2Bk or 2Bqk horizon:*

Value—6 to 8 dry, 4 to 7 moist

Chroma—1 to 3

Texture—very gravelly sand or very gravelly coarse sand

Reaction—moderately alkaline or strongly alkaline

Other characteristics—discontinuous, thin, weakly or strongly silica-cemented laminae in the 2Bqk horizon in some pedons

### Simpark Series

*Depth class:* Shallow to duripan

*Drainage class:* Well drained

*Parent material:* Residuum and colluvium that are derived from andesite, rhyolite, and quartzite and include some volcanic ash

*Positions on landscape:* Side slopes of low hills and mountains

*Slope:* 2 to 50 percent

*Mean annual precipitation:* About 10 inches

*Mean annual temperature:* About 44 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, frigid, shallow Xerollic Durargids

#### Typical Pedon

About 20 percent of the surface is covered with pebbles and 40 percent with cobbles.

A—0 to 3 inches; pale brown (10YR 6/3) very cobbly loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine and medium roots; many very fine, fine, and medium vesicular pores; 10 percent pebbles and 25 percent cobbles; mildly alkaline (pH 7.8); clear wavy boundary.

BA—3 to 13 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine tubular pores; 15 percent pebbles and 5 percent cobbles; mildly alkaline (pH 7.8); clear wavy boundary.

Bt—13 to 18 inches; pale brown (10YR 6/3) very cobbly loam, dark brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, sticky and plastic; few fine and medium roots; few fine tubular pores; common thin and few moderately thick clay films coating faces of peds and sand grains; 20 percent pebbles and 15 percent cobbles; thin silica coatings on the underside of rock fragments; moderately alkaline (pH 8.2); clear wavy boundary.

Bqkm—18 to 22 inches; very pale brown (10YR 7/3), indurated duripan that has a 0.5-inch-thick continuous laminar cap, brown (10YR 5/3) moist; massive; extremely hard, extremely firm; violently effervescent; clear wavy boundary.

2R—22 inches; andesite.

#### Typical Pedon Location

*Soil name and map unit in which located:* Simpark very cobbly loam, 15 to 30 percent slopes, in Akerue-Simpark-Punchbowl association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 20 miles east of Austin; in an unsectionalized area about 5.4 miles south and 2,200 feet east of the northwest corner of the assumed sec. 6, T. 18 N., R. 47 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in mid-June to mid-October

*Average annual soil temperature:* 44 to 46 degrees F

*Depth to the duripan:* 14 to 20 inches

*Depth to lithic contact:* 20 to 30 inches

*Other characteristics:* Thin Bk or Btq horizon above the duripan in some pedons

#### Control section:

Content of clay—18 to 27 percent

Content of rock fragments—35 to 60 percent, mainly cobbles or pebbles

#### A horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3

Reaction—neutral or mildly alkaline

#### Bt horizon:

Hue—7.5YR or 10YR

Value—4 to 6 dry, 3 to 5 moist

Chroma—2 to 4

Reaction—mildly alkaline or moderately alkaline

### Skullwak Series

*Depth class:* Very deep

*Drainage class:* Poorly drained

*Parent material:* Fine textured lacustrine sediment derived from various kinds of rock

*Positions on landscape:* Lake plains

*Slope:* 0 to 2 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 47 degrees F

**Taxonomic class:** Fine, montmorillonitic (calcareous), mesic Aeric Halaquepts

#### Typical Pedon

A—0 to 2 inches; light gray (10YR 7/2) silt loam, pale brown (10YR 6/3) moist; moderate medium platy structure; hard, friable, sticky and plastic; few very fine roots; common very fine vesicular pores; strongly effervescent; very strongly alkaline (pH 9.4); abrupt smooth boundary.

C—2 to 10 inches; light gray (10YR 7/2) silty clay loam, yellowish brown (10YR 5/4) moist; moderate fine angular blocky structure; hard, friable, very sticky and very plastic; common very fine and fine roots; common very fine tubular and interstitial pores; strongly effervescent; very strongly alkaline (pH 9.2); clear smooth boundary.

2Cqk—10 to 17 inches; light gray (10YR 7/2) silty clay loam, yellowish brown (10YR 5/4) moist; many medium distinct mottles that are light brownish gray (2.5Y 6/2) and light gray (2.5Y 7/2) moist; moderate fine angular blocky structure; hard, friable, very sticky and very plastic; common very fine, fine, and medium roots; common very fine interstitial pores; 15 percent strongly cemented durinodes 15 to 25 millimeters in diameter; strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

3Cqkg1—17 to 30 inches; white (5Y 8/2) silty clay, light olive gray (5Y 6/2) moist; many medium distinct mottles that are light gray (5Y 7/2) and yellowish brown (10YR 5/4) moist; massive; very hard, very firm, very sticky and very plastic; common very fine

and fine roots; few very fine tubular pores; 75 percent strongly cemented durinodes and discontinuous masses; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary.

3Cqkg2—30 to 37 inches; light gray (5Y 7/2) silty clay loam, olive gray (5Y 5/2) moist; common fine distinct mottles that are light gray (5Y 7/2) and yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, very sticky and very plastic; few very fine roots; few very fine tubular pores; 75 percent strongly cemented durinodes and discontinuous masses; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary.

3C1—37 to 46 inches; light gray (5Y 7/2) silty clay, light olive gray (5Y 6/2) moist; common fine distinct mottles that are olive (5Y 5/6) moist; moderate fine angular blocky structure; slightly hard, friable, very sticky and very plastic; few very fine roots; few very fine tubular pores; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

3C2—46 to 60 inches; light gray (5Y 7/2) silty clay loam, light olive gray (5Y 6/2) moist; few fine distinct mottles that are olive (5Y 5/6) moist; massive; hard, firm, very sticky and very plastic; strongly effervescent; moderately alkaline (pH 8.2).

#### Typical Pedon Location

*Soil name and map unit in which located:* Skullwak silt loam in Skullwak-Umberland-Wendane association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 41 miles northeast of Austin, in the Carico Lake Valley; in an unsectionalized area about 1,600 feet south and 1,600 feet west of the southwest corner of the assumed sec. 28, T. 24 N., R. 47 E.

#### Range in Characteristics

*Soil moisture content:* Saturated year-round at a depth of 18 to 36 inches

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to the Cqk horizon:* 8 to 14 inches

*Reaction:* Moderately alkaline to very strongly alkaline, commonly decreasing in alkalinity with increasing depth

*Exchangeable sodium percentage:* 25 to 40 above the Cqk horizon, 15 to 30 in and below the Cqk horizon

*Other characteristics:* Strongly affected by salt above the Cqk horizon, moderately affected in and below the Cqk horizon

#### Control section:

Texture—stratified silty clay loam or silty clay  
Content of clay—35 to 45 percent when mixed

#### A horizon:

Value—7 or 8 dry, 4 to 6 moist

Chroma—2 or 3

#### C and Cqk horizons:

Hue—10YR in the upper part, 5Y or 2.5Y in the lower part

Chroma—3 or 4 in the upper part, 1 or 2 in the lower part

### Sodhouse Series

*Depth class:* Shallow to duripan

*Drainage class:* Well drained

*Parent material:* Alluvium that is derived from various kinds of rock and includes some loess and volcanic ash

*Positions on landscape:* Fan piedmont remnants

*Slope:* 2 to 4 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 48 degrees F

**Taxonomic class:** Loamy, mixed, mesic, shallow Typic Durorthids

#### Typical Pedon

A—0 to 3 inches; pale brown (10YR 6/3) stony very fine sandy loam, brown (10YR 5/3) moist; moderate thin platy structure; slightly hard, very friable, nonsticky and nonplastic; common very fine roots; many very fine tubular pores; 2 percent stones; moderately alkaline (pH 8.0); clear smooth boundary.

Bw—3 to 10 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine roots; many very fine tubular pores; 2 percent stones; moderately alkaline (pH 8.4); clear smooth boundary.

Bqk—10 to 17 inches; very pale brown (10YR 7/3) fine sandy loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; 10 percent durinodes 3 to 5 millimeters in diameter; common fine round lime concretions; strongly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary.

2Bqkm—17 to 29 inches; white (10YR 8/2), indurated duripan, pale brown (10YR 6/3) moist; massive; abrupt smooth boundary.

2Cqk1—29 to 47 inches; very pale brown (10YR 7/3) very gravelly sandy loam, pale brown (10YR 6/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; 25 percent pebbles and 10 percent cobbles; 15 percent durinodes 15 to

30 millimeters in diameter; violently effervescent; strongly alkaline (pH 9.0); clear smooth boundary.

3Cqk2—47 to 60 inches; white (10YR 8/2) very gravelly loamy sand, pale brown (10YR 6/3) moist; massive; very hard, very firm, nonsticky and nonplastic; few very fine roots; about 30 percent pebbles, 5 percent cobbles, and 10 percent stones; continuously weakly silica-cemented; violently effervescent; strongly alkaline (pH 9.0).

#### Typical Pedon Location

*Soil name and map unit in which located:* Sodhouse stony very fine sandy loam in Orovada-Sodhouse association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 20 miles north of Battle Mountain; about 1,600 feet north and 1,700 feet west of the southeast corner of sec. 8, T. 35 N., R. 45 E.

#### Range in Characteristics

*Soil moisture content:* Moist for short periods in winter and spring, dry in June through November

*Average annual soil temperature:* 47 to 53 degrees F

*Depth to the indurated duripan:* 14 to 20 inches

*Thickness of the duripan:* 10 to 24 inches

*Depth to the Ck horizon:* 25 to 44 inches

*Content of clay in the control section:* 8 to 15 percent

*Reaction:* Moderately alkaline or strongly alkaline, usually increasing in alkalinity with increasing depth  
*Other characteristics:* Durinodes and lime accumulations common in strata immediately above the duripan in some pedons

#### A horizon:

Hue—10YR or 2.5Y

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3

Other characteristics—commonly noneffervescent, but slightly effervescent in some pedons as a result of lime recharge from dust

#### Bw horizon:

Hue—10YR or 2.5Y

Value—6 or 7 dry, 4 or 5 moist

Chroma—3 or 4

Texture—very fine sandy loam, fine sandy loam, loam, or gravelly loam

Content of rock fragments—5 to 35 percent, mainly pebbles

#### Bqkm horizon:

Hue—10YR or 2.5Y

Value—6 to 8 dry, 4 to 6 moist

Chroma—2 to 4

Structure—platy or massive

#### 2Ck horizon:

Texture—extremely gravelly sandy loam or very gravelly loamy sand

### Softscrabble Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Residuum and colluvium derived from volcanic rock and some chert, quartzite, and shale

*Positions on landscape:* Side slopes of mountains

*Slope:* 4 to 50 percent

*Mean annual precipitation:* About 16 inches

*Mean annual temperature:* About 44 degrees F

*Taxonomic class:* Loamy-skeletal, mixed, frigid Pachic Argixerolls

#### Typical Pedon

About 30 percent of the surface is covered with pebbles and 25 percent with cobbles and stones.

A1—0 to 3 inches; dark brown (10YR 4/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; weak thick platy structure; slightly hard, friable, nonsticky and nonplastic; many very fine and common fine roots; many very fine vesicular pores; 25 percent pebbles and 30 percent cobbles and stones; neutral (pH 7.0); abrupt smooth boundary.

A2—3 to 9 inches; dark brown (10YR 4/3) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine interstitial pores; 15 percent pebbles and 5 percent cobbles; neutral (pH 7.0); clear smooth boundary.

Bt1—9 to 16 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate medium and coarse angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; common thin clay films on faces of peds; 25 percent pebbles and 5 percent cobbles; neutral (pH 7.2); clear wavy boundary.

Bt2—16 to 22 inches; brown (10YR 5/3) very cobbly clay loam, dark brown (10YR 3/3) moist; moderate coarse angular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots and few medium and coarse roots; common fine tubular pores; common thin and few moderately thick clay films on faces of peds; 10 percent pebbles, 35

percent cobbles, and 10 percent stones; neutral (pH 6.8); clear wavy boundary.

Bt3—22 to 30 inches; light yellowish brown (10YR 6/4) very cobbly clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium angular blocky structure; hard, friable, sticky and plastic; common very fine and few fine roots; common fine tubular pores; many thin and few moderately thick clay films in pores and on faces of peds; 20 percent pebbles, 15 percent cobbles, and 5 percent stones; neutral (pH 6.8); gradual wavy boundary.

2Bt4—30 to 37 inches; brown (7.5YR 5/4) very gravelly clay loam, dark brown (7.5YR 3/4) moist; strong medium angular blocky structure; hard, firm, sticky and plastic; few very fine roots; few very fine tubular pores; common moderately thick clay films on faces of peds; 35 percent pebbles; neutral (pH 6.8); clear wavy boundary.

2Bt5—37 to 60 inches; light brown (7.5YR 6/4) very gravelly clay loam, dark brown (7.5YR 4/4) moist; weak angular blocky structure; hard, friable, sticky and plastic; very few very fine roots; few very fine tubular pores; common moderately thick clay films on peds; 55 percent pebbles; neutral (pH 7.0).

#### Typical Pedon Location

*Soil name and map unit in which located:* Softscrabble very cobbly loam, 15 to 50 percent slopes, in Zoesta-Robson-Softscrabble association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 15 miles east of Austin; about 1,000 feet west and 500 feet north of the southeast corner of sec. 1, T. 19 N., R. 46 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in mid-July to early in October

*Average annual soil temperature:* 44 to 47 degrees F

*Thickness of the mollic epipedon:* 20 to 38 inches

*Depth to the base of the Bt horizon:* 60 to 80 inches

*Reaction:* Slightly acid or neutral

#### Control section:

Content of clay—27 to 35 percent

Content of rock fragments (when mixed)—35 to 70 percent pebbles and cobbles and a few stones

#### A horizon:

Hue—10YR or 7.5YR

Value—3 to 5 dry, 2 or 3 moist

Chroma—2 or 3

Structure—platy, granular, or subangular blocky

#### Bt horizon:

Hue—10YR or 7.5YR

Value—4 to 6 dry, 3 or 4 moist

Chroma—2 to 4 (chroma of 4 in the lower part only)

Texture—loam or clay loam that averages 35 to 70 percent rock fragments, but individual strata are as little as 5 percent rock fragments

### Sonoma Series

*Depth class:* Very deep

*Drainage class:* Poorly drained

*Parent material:* Silty alluvium derived from various kinds of rock with a component of volcanic ash

*Positions on landscape:* Flood plains

*Slope:* 0 to 2 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 50 degrees F

**Taxonomic class:** Fine-silty, mixed (calcareous), mesic Aeric Fluvaquents

#### Typical Pedon

A1—0 to 3 inches; light brownish gray (10YR 6/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate thin and medium platy structure; slightly hard, very friable, sticky and plastic; common very fine and fine roots and few medium roots; few very fine vesicular pores; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary.

A2—3 to 12 inches; light brownish gray (10YR 6/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium prismatic structure parting to moderate fine subangular blocky; slightly hard, very friable, sticky and plastic; few very fine roots and common fine and medium roots; common fine interstitial pores; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary.

C1—12 to 19 inches; light gray (10YR 7/2) silty clay loam, dark grayish brown (10YR 4/2) moist; many fine distinct mottles that are dark brown (7.5YR 4/4) moist and few medium distinct mottles that are very dark brown (10YR 2/2) moist; moderate fine subangular blocky structure; slightly hard, very friable, very sticky and plastic; common fine and medium roots and few very fine and coarse roots; common fine interstitial pores; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary.

C2—19 to 29 inches; light gray (10YR 7/2) silty clay loam, dark grayish brown (10YR 4/2) moist; common fine distinct mottles that are dark brown (7.5YR 4/4) moist and few medium faint mottles that are brown (7.5YR 5/4) moist; moderate fine subangular blocky structure; slightly hard, very friable, very sticky and plastic; common fine and medium roots; common fine interstitial pores;



strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary.

- C3—29 to 38 inches; light brownish gray (10YR 6/2) silty clay loam, dark grayish brown (10YR 4/2) moist; common fine distinct mottles that are dark brown (7.5YR 4/4) moist and few fine distinct mottles that are very dark brown (10YR 2/2) moist; moderate fine subangular blocky structure; hard, friable, very sticky and very plastic; few fine and medium roots; common very fine interstitial pores; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary.
- C4—38 to 53 inches; light gray (10YR 7/2) silty clay loam, dark grayish brown (10YR 4/2) moist; many fine distinct mottles that are dark yellowish brown (10YR 4/6) moist; moderate thin and medium platy structure; hard, firm, very sticky and very plastic; few fine roots; common very fine vesicular pores; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary.
- C5—53 to 60 inches; light gray (10YR 7/2) silty clay loam, grayish brown (10YR 5/2) moist; many fine distinct mottles that are dark yellowish brown (10YR 4/4) moist; massive; hard, friable, very sticky and very plastic; common very fine tubular pores; strongly effervescent; strongly alkaline (pH 8.8).

#### Typical Pedon Location

*Soil name and map unit in which located:* Sonoma silt loam, frequently flooded, in Sonoma-Paranat association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 17 miles north of Austin; about 1,600 feet south and 100 feet east of the northeast corner of sec. 1, T. 21 N., R. 42 E.

#### Range in Characteristics

*Soil moisture content (undrained areas):* Saturated in spring and early in summer; water table at a depth of more than 40 inches the rest of the year

*Average annual soil temperature:* 49 to 53 degrees F

*Depth to the buried A horizon (when present):* 30 to 55 inches

*Calcium carbonate equivalent:* 3 to 12 percent throughout the profile

*Effervescence:* Strongly effervescent or violently effervescent

#### Control section:

Texture—dominantly stratified silt loam to silty clay loam, but strata of clay or silty clay in some pedons

Content of clay—25 to 35 percent

#### A horizon:

Hue—2.5Y or 10YR

Value—3 to 5 moist

Reaction—moderately alkaline to very strongly alkaline (buried A horizon, when present, is moderately alkaline or strongly alkaline)

#### C horizon:

Hue—10YR to 5Y

Value—6 to 8 dry, 3 to 5 moist

Chroma—dominantly 1 or 2, but 3 in some strata in some pedons

Structure—platy, subangular blocky, or massive

Reaction—moderately alkaline to very strongly alkaline

Other characteristics—freshwater crustacean shells and lime concretions 0.25 to 0.5 inch in diameter in most pedons

### Spasprey Series

*Depth class:* Moderately deep to duripan

*Drainage class:* Well drained

*Parent material:* Alluvium derived from various kinds of rock

*Positions on landscape:* Fan piedmont remnants

*Slope:* 0 to 8 percent

*Mean annual precipitation:* About 9 inches

*Mean annual temperature:* About 49 degrees F

*Taxonomic class:* Fine-loamy, mixed, mesic Haploxerollic Durargids

#### Typical Pedon

About 15 percent of the surface is covered with pebbles.

A—0 to 5 inches; light brownish gray (10YR 6/2) gravelly fine sandy loam, dark brown (10YR 3/3) moist; moderate medium and thick platy structure; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; many very fine vesicular pores; 15 percent pebbles; neutral (pH 7.2); clear smooth boundary.

Bt1—5 to 9 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common fine and medium roots; few very fine tubular pores; common thin clay bridges between mineral grains; mildly alkaline (pH 7.4); clear smooth boundary.

Bt2—9 to 17 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium prismatic structure parting to moderate medium angular blocky; hard, friable, very sticky and very plastic; common very fine, fine, and medium roots; common very fine tubular pores; common thin and few moderately thick clay films on

faces of peds: mildly alkaline (pH 7.6); clear smooth boundary.

**Bqk**—17 to 26 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; hard, firm, sticky and plastic; few fine and medium roots; few very fine tubular pores; 30 percent discontinuous weak silica cementation and 30 percent strongly cemented durinodes; slightly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

**Bqkm**—26 to 33 inches; very pale brown (10YR 7/4) strongly cemented duripan, dark yellowish brown (10YR 4/4) moist; massive; very hard, very firm; few very fine roots; very few very fine tubular pores; slightly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

**Cqk**—33 to 60 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 4/3) moist; massive; hard, friable, nonsticky and nonplastic; few fine and medium roots; common very fine tubular pores; 30 percent discontinuous weak silica cementation and 20 percent discontinuous strongly silica-cemented masses; strongly effervescent; moderately alkaline (pH 8.4).

### Typical Pedon Location

*Soil name and map unit in which located:* Spasprey gravelly fine sandy loam, 2 to 4 percent slopes, in Spasprey-Allor association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 43 miles southwest of Austin; about 2,100 feet north and 2,700 feet east of the northwest corner of sec. 28, T. 15 N., R. 38 E.

### Range in Characteristics

*Soil moisture content:* Usually dry, but moist in some part in mid-October to mid-June

*Average annual soil temperature:* 47 to 53 degrees F

*Depth to the base of the Bt horizon:* 10 to 20 inches

*Depth to the strongly cemented duripan:* 20 to 30 inches

*Control section:*

Texture—clay loam, loam, or sandy clay loam in the upper part; sandy loam or loam in the lower part

Content of clay—20 to 35 percent when mixed

Content of sand—more than 35 percent

Content of rock fragments—less than 10 percent

*A horizon:*

Hue—2.5Y or 10YR

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 to 4

Consistence—nonsticky or slightly sticky and nonplastic or slightly plastic (wet)

*Bt horizon:*

Hue—7.5YR, 10YR, or 2.5Y

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4

Texture—sandy clay loam, loam, or clay loam

Content of rock fragments—less than 10 percent

Structure—subangular blocky, angular blocky, or prismatic

Consistence—slightly hard or hard (dry), sticky or very sticky and plastic or very plastic (wet)

Reaction—neutral or mildly alkaline

*Bqkm horizon:*

Hue—2.5Y, 10YR, or 7.5YR

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 to 4

## Spike Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Gravelly alluvium derived from various kinds of rock

*Positions on landscape:* Side slopes of fan piedmont remnants and partial ballenas

*Slope:* 30 to 50 percent

*Mean annual precipitation:* About 8 inches

*Mean annual temperature:* About 49 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, mesic Typic Haplargids

### Typical Pedon

About 70 percent of the surface is covered with pebbles and 5 percent with cobbles.

**A1**—0 to 1 inch; very pale brown (10YR 7/3) very gravelly sandy loam, dark brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; many fine vesicular pores; 35 percent pebbles; moderately alkaline (pH 8.4); abrupt smooth boundary.

**A2**—1 to 2 inches; pale brown (10YR 6/3) gravelly loam, dark yellowish brown (10YR 4/4) moist; weak thin platy structure; slightly hard, friable, slightly sticky and plastic; few very fine roots; many fine vesicular and tubular pores; 25 percent pebbles; moderately alkaline (pH 8.4); abrupt smooth boundary.

**Btn**—2 to 6 inches; yellowish brown (10YR 5/6) very gravelly clay, dark yellowish brown (10YR 4/6) moist; strong fine angular blocky structure; very hard, firm, very sticky and very plastic; common very fine and fine roots; common very fine and fine

tubular pores; many moderately thick clay films on faces of peds and lining pores; 45 percent pebbles; moderately alkaline (pH 8.4); clear wavy boundary.

**Btk1**—6 to 14 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, yellowish brown (10YR 5/4) moist; weak fine subangular blocky structure; very hard, friable, very sticky and plastic; few fine roots; common very fine and fine tubular and interstitial pores; common thin clay films on faces of peds and lining pores; 45 percent pebbles and 10 percent cobbles; common medium soft lime masses and common thin lime coatings on the underside of rock fragments; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary.

**Btk2**—14 to 18 inches; light yellowish brown (10YR 6/4) extremely gravelly sandy clay loam, dark yellowish brown (10YR 4/6) moist; massive; very hard, firm, sticky and plastic; few very fine roots; common very fine and fine tubular pores; common thin clay films bridging mineral grains; 60 percent pebbles and 5 percent cobbles; common thin lime coatings on the underside of rock fragments; strongly effervescent; strongly alkaline (pH 8.6); gradual wavy boundary.

**Btk3**—18 to 30 inches; very pale brown (10YR 7/4) extremely gravelly sandy clay loam, brownish yellow (10YR 6/6) moist; massive; hard, friable, sticky and plastic; very few fine roots; common very fine and fine interstitial pores; common thin clay films bridging mineral grains; 55 percent pebbles and 10 percent cobbles; common medium soft lime masses and common thin lime coatings on the underside of rock fragments; strongly effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

**Btky1**—30 to 44 inches; very pale brown (10YR 7/4) extremely gravelly clay loam, brownish yellow (10YR 6/6) moist; massive; hard, friable, sticky and plastic; very few fine roots; common very fine and fine interstitial pores; common thin clay films bridging mineral grains; 55 percent pebbles and 10 percent cobbles; common medium soft lime masses and common thin lime coatings on the underside of rock fragments; common medium filaments of gypsum; violently effervescent; moderately alkaline (pH 8.2); gradual wavy boundary.

**Btky2**—44 to 60 inches; very pale brown (10YR 7/3) extremely gravelly sandy clay loam, light yellowish brown (10YR 6/4) moist; massive; hard, friable, sticky and plastic; few fine tubular pores; common thin clay films bridging mineral grains; 50 percent pebbles and 10 percent cobbles; common medium soft lime masses and common thin lime coatings on

the underside of coarse fragments; common medium filaments of gypsum; violently effervescent; strongly alkaline (pH 8.6).

### Typical Pedon Location

*Soil name and map unit in which located:* Spike very gravelly sandy loam, 30 to 50 percent slopes, in Pula-Spike association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 22 miles north of Austin; about 600 feet south and 2,300 feet east of the northwest corner of sec. 24, T. 23 N., R. 43 E.

### Range in Characteristics

*Soil moisture content:* Moist in winter to early in spring, dry in mid-May through October

*Average annual soil temperature:* 47 to 53 degrees F

*Depth to lime:* 5 to 12 inches

*Depth to secondary gypsum:* 12 to 35 inches

*Depth to the base of the Bt horizon:* 40 to more than 60 inches

*Reaction:* Moderately alkaline or strongly alkaline

*Control section:*

Content of clay—27 to 35 percent

Content of rock fragments—35 to 60 percent

*A horizon:*

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 to 4

*B horizon:*

Value—5 to 7 dry, 4 to 6 moist

Chroma—3, 4, or 6

Structure—commonly angular blocky or subangular blocky, but massive in the lower part in some pedons

Exchangeable sodium percentage—15 to 35

*Btn horizon:*

Texture—very gravelly clay, very gravelly clay loam, or very gravelly sandy clay

Content of clay—35 to 45 percent

Content of rock fragments—35 to 60 percent, mainly pebbles

*Btk and Btky horizons:*

Texture—dominantly extremely gravelly clay loam, extremely gravelly sandy clay loam, extremely gravelly loam, or very gravelly loam, but strata of extremely gravelly sandy loam or extremely gravelly loam at a depth of more than 40 inches in some pedons

Content of clay—20 to 30 percent when mixed

Content of rock fragments—50 to 75 percent, mainly pebbles

## Stampede Series

*Depth class:* Moderately deep to duripan

*Drainage class:* Well drained

*Parent material:* Alluvium derived from tuff and various other kinds of rock

*Positions on landscape:* Valley fans of mountains

*Slope:* 4 to 8 percent

*Mean annual precipitation:* About 12 inches

*Mean annual temperature:* About 43 degrees F

**Taxonomic class:** Fine, montmorillonitic, frigid Aridic Durixerolls

### Typical Pedon

About 40 percent of the surface is covered with pebbles.

A1—0 to 4 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate thin platy structure; soft, friable, nonsticky and nonplastic; common fine roots; many fine vesicular pores; 20 percent pebbles; neutral (pH 6.6); abrupt smooth boundary.

A2—4 to 10 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; common fine roots; many fine interstitial pores; neutral (pH 6.8); clear wavy boundary.

A3—10 to 18 inches; brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; strong medium subangular blocky structure; hard, firm, sticky and plastic; common fine roots; common very fine tubular pores; neutral (pH 6.8); clear wavy boundary.

Bt—18 to 31 inches; yellowish brown (10YR 5/4) clay, yellowish brown (10YR 5/6) moist; strong medium prismatic structure; very hard, very firm, very sticky and very plastic; few fine roots; few very fine tubular pores; continuous thin clay films; neutral (pH 7.2); abrupt smooth boundary.

Bqkm—31 to 60 inches; indurated duripan.

### Typical Pedon Location

*Soil name and map unit in which located:* Stampede gravelly loam, 4 to 8 percent slopes, in Stampede-Handy-Caniwe association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 15 miles northwest of Austin; about 1,400 feet north and 2,700 feet east of the southwest corner of sec. 1, T. 20 N., R. 40 E.

### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in July through October

*Average annual soil temperature:* 44 to 47 degrees F

*Thickness of the mollic epipedon:* 7 to 13 inches

*Depth to the duripan:* 20 to 36 inches

*Control section:*

Content of clay—40 to 55 percent

Content of rock fragments—0 to 10 percent pebbles

*A horizon:*

Value—dominantly 4 or 5 dry and 2 or 3 moist, but 6 dry and 4 moist common in the lower part

Chroma—2 or 3

Structure—weak or moderate, thin to thick, and platy, or massive in the upper 3 to 5 inches;

moderate or strong, fine or medium, and

granular or subangular blocky below this depth

Reaction—slightly acid or neutral

*Bt horizon:*

Hue—10YR or 7.5YR

Value—5 or 6 dry, 3 to 5 moist

Chroma—2 to 4

Content of rock fragments—as much as 15 percent

Structure—moderate or strong, medium or coarse, and prismatic, or fine to coarse and subangular blocky or angular blocky

Reaction—neutral or mildly alkaline

*Bqkm horizon:*

Reaction—mildly alkaline or moderately alkaline

Other characteristics—noneffervescent to strongly effervescent in the matrix, few to many lime coatings at top or in fractures

## Stingdorn Series

*Depth class:* Very shallow or shallow to duripan

*Drainage class:* Well drained

*Parent material:* Residuum derived from rhyolite, andesite, and tuff

*Positions on landscape:* Crests and side slopes of foothills and hills

*Slope:* 2 to 50 percent

*Mean annual temperature:* About 49 degrees

*Mean annual precipitation:* About 6 inches

**Taxonomic class:** Loamy-skeletal, mixed, mesic, shallow Typic Durargids

### Typical Pedon

About 5 percent of the surface is covered with pebbles and 40 percent with cobbles.

A—0 to 7 inches; light brownish gray (10YR 6/2) very cobbly loam, dark brown (10YR 4/3) moist; weak thick platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine vesicular pores; 5

percent pebbles and 40 percent cobbles; moderately alkaline (pH 8.0); clear wavy boundary.

**Bt1**—7 to 11 inches; light yellowish brown (10YR 6/4) very cobbly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots and few coarse roots; common very fine and fine tubular pores; few thin clay films lining pores and on faces of peds; 5 percent pebbles and 30 percent cobbles; moderately alkaline (pH 8.2); clear wavy boundary.

**Bt2**—11 to 15 inches; yellowish brown (10YR 5/4) very cobbly clay loam, dark yellowish brown (10YR 4/4) moist; strong fine angular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots and few coarse roots; common very fine and fine tubular pores; many moderately thick clay films lining pores and on faces of peds; 5 percent indurated pan fragments; 10 percent pebbles and 30 percent cobbles; strongly effervescent; moderately alkaline (pH 8.4); abrupt irregular boundary.

**Bqkm**—15 to 20 inches; very pale brown (10YR 7/3), indurated duripan, pale brown (10YR 6/3) moist; several thin indurated horizontal lamellae throughout strongly silica-cemented matrix; indurated laminar cap 2 to 5 millimeters thick over bedrock; violently effervescent; strongly alkaline (pH 8.8); abrupt smooth boundary.

**R**—20 inches; unweathered tuff.

#### Typical Pedon Location

*Map unit in which located:* Stingdorn very cobbly loam, 4 to 30 percent slopes

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 42 miles southwest of Battle Mountain; about 1,500 feet east and 1,400 feet north of the southwest corner of sec. 31, T. 26 N., R. 41 E.

#### Range in Characteristics

*Soil moisture content:* Moist for short periods in winter and spring, dry in May through October

*Average annual soil temperature:* 47 to 54 degrees F

*Combined thickness of the A and Bt horizons:* 7 to 16 inches

*Depth to the indurated duripan:* 8 to 20 inches

#### A horizon:

Hue—10YR or 2.5Y

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3

Consistence—soft or slightly hard (dry)

Reaction—mildly alkaline to strongly alkaline

#### Bt horizon:

Hue—10YR or 2.5Y

Value—5 or 6 dry, 4 or 5 moist

Chroma—3 or 4

Content of clay—averages 27 to 35 percent, but is slightly less in some strata in some pedons

Content of rock fragments—35 to 50 percent, mainly pebbles

Consistence—slightly hard or hard (dry), very friable or friable (moist)

Reaction—mildly alkaline to strongly alkaline

Effervescence—slightly effervescent or strongly effervescent in some pedons, noneffervescent in the upper part in some pedons

#### Bqk horizon (when present):

Hue—10YR or 2.5Y

Value—6 to 8 dry, 6 or 7 moist

Chroma—2 or 3

Reaction—moderately alkaline or strongly alkaline

### Sumine Series

*Depth class:* Moderately deep

*Drainage class:* Well drained

*Parent material:* Residuum and colluvium derived from dominantly quartzite, breccia, and sandstone

*Positions on landscape:* South-facing side slopes of mountains

*Slope:* 30 to 50 percent

*Mean annual precipitation:* About 12 inches

*Mean annual temperature:* About 44 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, frigid Aridic Argixerolls

#### Typical Pedon

About 15 percent of the surface is covered with pebbles and 15 percent with cobbles.

**A1**—0 to 5 inches; brown (10YR 5/3) cobbly loam, dark brown (10YR 3/3) moist; weak medium platy structure parting to moderate fine granular; soft, friable, slightly sticky and slightly plastic; many very fine roots; many very fine interstitial pores and common very fine tubular pores; 10 percent pebbles and 10 percent cobbles; slightly effervescent; neutral (pH 7.2); gradual smooth boundary.

**A2**—5 to 10 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; many very fine interstitial pores and common very fine

tubular pores; 15 percent pebbles and 5 percent cobbles; neutral (pH 7.3); clear smooth boundary.

Bt1—10 to 13 inches; pale brown (10YR 6/3) gravelly clay loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine roots and few medium roots; common very fine interstitial and tubular pores; few thin clay films on faces of peds; 30 percent pebbles; neutral (pH 7.3); clear wavy boundary.

Bt2—13 to 19 inches; pale brown (10YR 6/3) very gravelly clay loam, dark brown (10YR 4/3) moist; moderate medium angular blocky structure; hard, firm, sticky and plastic; few very fine and fine roots; few very fine and fine tubular pores; common moderately thick clay films lining pores and on faces of peds; 35 percent pebbles and 10 percent cobbles; mildly alkaline (pH 7.6); clear wavy boundary.

Bt3—19 to 24 inches; light yellowish brown (10YR 6/4) very cobbly loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; hard, firm, sticky and plastic; few very fine and fine roots; few very fine and fine tubular pores; common moderately thick clay films on faces of peds; 25 percent pebbles and 20 percent cobbles; mildly alkaline (pH 7.8); abrupt wavy boundary.

Bt4—24 to 30 inches; light yellowish brown (10YR 6/4) extremely cobbly loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, firm, sticky and plastic; few very fine and fine roots; few very fine and fine tubular pores; 25 percent pebbles and 40 percent cobbles; mildly alkaline (pH 7.8); abrupt wavy boundary.

2R—30 inches; quartzite.

### Typical Pedon Location

*Soil name and map unit in which located:* Sumine cobbly loam, 30 to 50 percent slopes, in Walti-Sumine-Softscrabble association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 28 miles south of Battle Mountain; about 50 feet west and 1,000 feet south of the northeast corner of sec. 32, T. 26 N., R. 44 E.

### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry early in July to mid-October

*Average annual soil temperature:* 42 to 47 degrees F

*Thickness of the mollic epipedon:* 8 to 15 inches

*Depth to bedrock:* 20 to 40 inches

*Combined thickness of the A and Bt horizons:* 20 to 40 inches

*Reaction:* Neutral or mildly alkaline

### Control section:

Content of clay—25 to 35 percent when mixed

Texture—dominantly clay loam, but some pedons have thin strata of loam or clay

Content of rock fragments—averages 35 to 60 percent

### A horizon:

Chroma—2 or 3

Structure—weak or moderate, very thin to medium, and platy; or weak or moderate, very fine to medium, and granular or subangular blocky

Consistence—soft or slightly hard (dry), very friable or friable (moist)

### Bt horizon:

Hue—10YR or 7.5YR

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4

Structure—dominantly weak or moderate, very fine, fine, or medium, and angular blocky or subangular blocky, but the lower part is massive in some pedons

## Sundown Series

*Depth class:* Very deep

*Drainage class:* Somewhat excessively drained

*Parent material:* Mixed alluvium and eolian deposits

*Positions on landscape:* Sand sheets

*Slope:* 2 to 4 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 53 degrees F

**Taxonomic class:** Mixed, mesic Typic Torripsamments

### Typical Pedon

A—0 to 7 inches; pale brown (10YR 6/3) fine sand, brown (10YR 4/3) moist; moderate thin platy structure parting to moderate medium subangular blocky; soft, very friable, nonsticky and nonplastic; common fine and medium roots and few very fine roots; common fine and medium vesicular pores; strongly effervescent or violently effervescent; moderately alkaline (pH 8.4); clear smooth boundary.

C1—7 to 12 inches; pale brown (10YR 6/3) loamy fine sand, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many fine and medium roots and common very fine roots; many fine and medium tubular pores; 10 percent pebbles; violently effervescent; strongly alkaline (pH 8.8); clear smooth boundary.

C2—12 to 60 inches; pale brown (10YR 6/3) loamy fine sand, brown (10YR 4/3) moist; massive; soft, very friable, sticky and nonplastic; common fine roots; common fine and medium tubular pores; violently effervescent; strongly alkaline (pH 8.8).

#### Typical Pedon Location

*Soil name and map unit in which located:* Sundown fine sand, 2 to 4 percent slopes, in Wardenot-Sundown association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 20 miles south of Austin; about 2,600 feet north and 2,400 feet west of the southeast corner of sec. 11, T. 16 N., R. 45 E.

#### Range in Characteristics

*Soil moisture content:* Usually dry, but moist in some part for short periods in winter and early in spring and for 10 to 20 days cumulatively between July and October as a result of convection storms

*Average annual soil temperature:* 55 to 59 degrees F

*Reaction:* Moderately alkaline to very strongly alkaline

*Other characteristics:* Calcareous throughout

#### A horizon:

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3 dry or moist

#### C horizon:

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3 dry or moist

Texture—dominantly loamy fine sand, but thin strata of sand, fine sand, or loamy sand in some pedons

Content of rock fragments—as much as 15 percent, dominantly pebbles

Structure—subangular blocky, massive, or single grain

Other characteristics—unconformable material, when present, is at a depth of 40 to 60 inches and is dominantly sandy clay loam

### Teguro Series

*Depth class:* Shallow

*Drainage class:* Well drained

*Parent material:* Residuum derived from rhyolitic tuff, rhyolite, and basalt

*Positions on landscape:* Side slopes of foothills and mountains

*Slope:* 30 to 50 percent

*Mean annual precipitation:* About 14 inches

*Mean annual temperature:* About 45 degrees F

**Taxonomic class:** Loamy, mixed, frigid Lithic Argixerolls

#### Typical Pedon

About 55 percent of the surface is covered with pebbles.

A—0 to 4 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine vesicular pores; 35 percent pebbles; neutral (pH 6.8); abrupt smooth boundary.

Bt1—4 to 9 inches; brown (10YR 5/3) gravelly clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; many fine roots and few very fine and medium roots; common very fine and fine tubular and interstitial pores; common thin clay films on faces of peds and lining pores; 30 percent pebbles; neutral (pH 7.0); clear smooth boundary.

Bt2—9 to 16 inches; pale yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium angular blocky structure; slightly hard, friable, very sticky and very plastic; common very fine, fine, and medium roots; few very fine tubular pores; common moderately thick clay films on faces of peds and lining pores; 30 percent pebbles; neutral (pH 7.2); abrupt irregular boundary.

R—16 inches; rhyolitic tuff.

#### Typical Pedon Location

*Soil name and map unit in which located:* Teguro very gravelly loam, 30 to 50 percent slopes, in Punchbowl-Teguro-Sumine association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 14 miles southwest of Battle Mountain; about 2,600 feet east and 1,500 feet south of the northwest corner of sec. 2, T. 31 N., R. 42 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in mid-July to early in October

*Average annual soil temperature:* 43 to 47 degrees F

*Thickness of the mollic epipedon:* 7 to 12 inches (includes the upper part of the Bt horizon)

*Combined thickness of the A and Bt horizons and depth to bedrock:* 14 to 20 inches

#### Control section:

Content of clay—25 to 35 percent

Content of rock fragments—15 to 35 percent, mainly pebbles

Reaction—slightly acid or neutral

*A horizon:*

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

*Bt horizon:*

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—gravelly loam or gravelly clay loam

**Tenabo Series***Depth class:* Very shallow or shallow to duripan*Drainage class:* Well drained*Parent material:* Thin mantle of loess that is high in content of volcanic ash over alluvium derived from various kinds of rock*Positions on landscape:* Fan piedmont remnants*Slope:* 0 to 8 percent*Mean annual precipitation:* About 7 inches*Mean annual temperature:* About 47 degrees F**Taxonomic class:** Loamy, mixed, mesic, shallow Typic Nadurargids**Typical Pedon**

A1—0 to 7 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and plastic; common very fine random roots and few fine oblique roots; many very fine vesicular pores; 5 percent small pebbles; moderately alkaline (pH 8.4); clear wavy boundary.

A2—7 to 13 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; massive; hard, very friable, sticky and plastic; common very fine and fine random roots and very few medium and coarse oblique roots; common very fine vesicular and tubular pores and few fine tubular pores; 5 percent small pebbles; strongly effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary.

Btn1—13 to 17 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 4/3) moist; weak medium prismatic structure parting to moderately very fine and fine angular blocky; slightly hard, very friable, sticky and plastic; common very fine random roots; common very fine interstitial and tubular pores; common thin clay films on faces of peds and lining pores; 10 percent small pebbles; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary.

Btn2—17 to 20 inches; very pale brown (10YR 7/3) gravelly silty clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure

parting to moderate fine angular blocky; slightly hard, very friable, sticky and plastic; few very fine random roots and very few fine horizontal roots; common very fine interstitial and tubular pores; many thin clay films on faces of peds and lining pores; 20 percent small pebbles; strongly effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary.

2Bqkm1—20 to 24 inches; light yellowish brown (10YR 6/4), indurated duripan, dark yellowish brown (10YR 4/4) moist; common fine distinct iron mottles that are reddish yellow (7.5YR 7/6) and strong brown (7.5YR 5/6) moist; massive; very hard, very firm; very few very fine roots in fractures; few very fine tubular pores; continuous, very pale brown (10YR 8/3 and 7/3, moist), silica laminae  $\frac{1}{16}$  to  $\frac{1}{8}$  inch thick; about 30 percent small rounded pebbles; strongly effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary.

2Bqkm2—24 to 39 inches; very pale brown (10YR 7/3), strongly silica-cemented duripan, dark yellowish brown (10YR 4/4) moist; massive; very hard, very firm; few very fine roots in fractures; many very fine interstitial pores; silica laminae 1 to 3 inches thick throughout the horizon; 70 percent rounded pebbles as much as 0.5 inch in diameter; strongly effervescent; moderately alkaline (pH 8.4); gradual smooth boundary.

2C—39 to 60 inches; very pale brown (10YR 7/3) extremely gravelly loamy sand, dark yellowish brown (10YR 4/1) moist; single grain; loose, nonsticky and nonplastic; few very fine random roots; many very fine interstitial pores; few discontinuous silica- and lime-cemented lenses; 75 percent rounded pebbles as much as 1.5 inches in diameter; slightly effervescent; moderately alkaline (pH 8.4).

**Typical Pedon Location**

*Soil name and map unit in which located:* Tenabo silt loam, 0 to 2 percent slopes, in Beoska-Tenabo silt loams, nearly level

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 50 miles southwest of Battle Mountain; about 1,320 feet west and 25 feet north of the southeast corner of sec. 27, T. 25 N., R. 42 E.

**Range in Characteristics**

*Soil moisture content:* Moist in winter and spring, dry late in May through November

*Average annual soil temperature:* 47 to 51 degrees F

*Depth to the duripan:* 9 to 20 inches



**Reaction:** Moderately alkaline or strongly alkaline in the A and Bt horizons, moderately alkaline to very strongly alkaline below these horizons

**Effervescence:** Ranges from noneffervescent in the upper layer to violently effervescent in the layer above the duripan in areas subject to lime recharge

**Control section:**

Content of clay—27 to 35 percent

Content of rock fragments—less than 20 percent when mixed

**A horizon:**

Hue—10YR or 2.5Y

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3

Structure—weak or moderate, very thin to thick, and platy, or massive

**Bt and Btn horizons:**

Value—5 to 7 dry, 4 or 5 moist

Chroma—3, 4, or 6

Texture of the fine-earth fraction—dominantly clay loam, silty clay loam, or sandy clay loam, but thin strata of silt loam in some pedons

Content of rock fragments—less than 20 percent, mainly pebbles, but some duripan fragments included in some pedons

Structure—moderate, fine or medium, and prismatic, angular blocky, or subangular blocky

Reaction—moderately alkaline or strongly alkaline, commonly increasing in alkalinity with increasing depth

Exchangeable sodium percentage—15 to 30

Other characteristics—the lower part violently effervescent in some pedons and contains segregated lime

**Bqkm horizon:**

Value—6 to 8 dry, 4 to 7 moist

Chroma—2 to 4

Other characteristics—very hard or extremely hard, continuous laminae stratified with strongly cemented material

**C horizon:**

Texture—gravelly to extremely gravelly sand, loamy sand, or sandy loam

Content of rock fragments—15 to 85 percent, mainly pebbles

## **Tessfive Series**

**Depth class:** Shallow

**Drainage class:** Well drained

**Parent material:** Residuum that is derived from tuffaceous sediment and includes some loess

**Positions on landscape:** Rolling crests and side slopes of hills

**Slope:** 2 to 30 percent

**Mean annual precipitation:** About 8 inches

**Mean annual temperature:** About 48 degrees F

**Taxonomic class:** Loamy, mixed (calcareous), mesic Lithic Xeric Torriorthents

### **Typical Pedon**

About 35 percent of the surface is covered with pebbles.

**A1**—0 to 3 inches; light brownish gray (10YR 6/2) gravelly loam, dark grayish brown (10YR 4/2) moist; moderate thin platy structure; soft, very friable, sticky and plastic; few very fine roots; common very fine vesicular pores; 20 percent pebbles; slightly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

**A2**—3 to 6 inches; light brownish gray (10YR 6/2) gravelly loam, dark grayish brown (10YR 4/2) moist; weak thin platy structure; soft, very friable, slightly sticky and plastic; common very fine roots; common very fine interstitial pores; 20 percent pebbles; slightly effervescent; moderately alkaline (pH 8.4); clear smooth boundary.

**Bk1**—6 to 10 inches; light brownish gray (10YR 6/2) gravelly loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine, fine, and medium roots; few very fine tubular pores; few fine lime filaments or threads and lime coatings on the underside of rock fragments; 20 percent pebbles; strongly effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

**Bk2**—10 to 16 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; few very fine tubular pores; few fine and medium lime filaments or threads and lime coatings on the underside of rock fragments; 25 percent pebbles; strongly effervescent; strongly alkaline (pH 8.6); abrupt wavy boundary.

**R**—16 to 20 inches; hard, fractured, consolidated, tuffaceous sediment; lime coatings on rock fragments.

### **Typical Pedon Location**

**Soil name and map unit in which located:** Tessfive gravelly loam, 8 to 30 percent slopes, in Tessfive-Puett-Grina association

**Location in Nevada:** Lander County, Nevada, North Part, survey area; about 23 miles north of Austin; in an unsectionalized area about 10,000 feet south and

4,250 feet west of the southwest corner of the assumed sec. 27, T. 24 N., R. 43 E.

### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry late in June through October

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to bedrock:* 10 to 20 inches

*Reaction:* Moderately alkaline or strongly alkaline

*Calcium carbonate equivalent:* Dominantly 5 to 15 percent, but the A1 horizon leached of carbonates in some pedons

*Other characteristics:* In some pedons the upper few inches of bedrock are highly weathered paralithic material

#### Control section:

Content of clay—14 to 24 percent

Texture—loam or sandy loam

Content of rock fragments—20 to 35 percent, mainly pebbles

#### A horizon:

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3

#### Bk horizon:

Value—6 to 8 dry, 4 to 6 moist

Chroma—2 to 6

Structure—subangular blocky or massive

Other characteristics—as much as 15 percent weakly cemented durinodes in the lower part in some pedons

### Tomel Series

*Depth class:* Shallow to duripan

*Drainage class:* Well drained

*Parent material:* Alluvium derived from shale, siltstone, limestone, and chert

*Positions on landscape:* Fan piedmont remnants

*Slope:* 2 to 8 percent

*Mean annual precipitation:* About 6 inches

*Mean annual temperature:* About 51 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, mesic, shallow Typic Durargids

### Typical Pedon

About 55 percent of the surface is covered with pebbles.

A—0 to 4 inches; light gray (10YR 7/2) gravelly fine sandy loam, grayish brown (10YR 5/2) moist; weak medium and thick platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine, fine, medium, and coarse vesicular pores and

few very fine and fine tubular pores; 20 percent pebbles; slightly effervescent; strongly alkaline (pH 9.0); abrupt smooth boundary.

Bt1—4 to 8 inches; pale brown (10YR 6/3) gravelly clay loam, dark brown (10YR 4/3) moist; weak fine angular blocky structure; soft, very friable, very sticky and plastic; common very fine and fine roots; few very fine tubular pores; few thin lime and silica coatings on the underside of pebbles; few moderately thick clay films on faces of peds, in root channels, and lining tubular pores; 25 percent pebbles; few fine soft lime masses; slightly effervescent; strongly alkaline (pH 9.0); gradual wavy boundary.

Bt2—8 to 11 inches; dark grayish brown (10YR 4/2) very gravelly clay loam, very dark grayish brown (10YR 3/2) moist; weak very fine subangular blocky structure; slightly hard, very friable, very sticky and very plastic; few very fine and fine roots; few very fine tubular pores; 45 percent pebbles; few thin lime and silica coatings on the underside of pebbles; few moderately thick clay films on faces of peds, in root channels, and lining tubular pores; common medium soft lime masses; slightly effervescent; very strongly alkaline (pH 9.0); gradual wavy boundary.

Bk—11 to 15 inches; light gray (10YR 7/2) very gravelly sandy clay loam, pale brown (10YR 6/3) moist; weak very fine subangular blocky structure; slightly hard, firm, sticky and plastic; few very fine and fine roots; few very fine tubular pores; thick lime and silica coatings on the underside of pebbles; 50 percent pebbles; many coarse soft lime masses; strongly effervescent; very strongly alkaline (pH 9.4); gradual wavy boundary.

Bqk—15 to 18 inches; white (10YR 8/2) gravelly sandy loam, very pale brown (10YR 7/3) moist; massive; hard, firm, slightly sticky and nonplastic; few very fine and fine roots; few very fine tubular pores; 30 percent discontinuously weakly cemented pebbles; thick lime and silica coatings on the underside of pebbles; violently effervescent; strongly alkaline (pH 8.6); gradual wavy boundary.

Bqkm1—18 to 26 inches; white (2.5Y 8/2), indurated duripan that has a continuous laminar cap 0.5 millimeter thick, light brownish gray (2.5Y 6/2) moist; massive; extremely hard, extremely firm; violently effervescent; strongly alkaline (pH 8.6); gradual wavy boundary.

Bqkm2—26 to 33 inches; light brownish gray (2.5Y 6/2), continuous, strongly cemented duripan, dark grayish brown (2.5Y 4/2) moist; massive; extremely hard, extremely firm; violently effervescent; strongly alkaline (pH 8.6); gradual wavy boundary.

2Cqk—33 to 60 inches; stratified light gray (10YR 7/1)

extremely gravelly sand and discontinuous, strongly cemented duripan, gray (10YR 6/1) moist; massive; extremely hard, extremely firm, nonsticky and nonplastic; 70 percent pebbles; violently effervescent; strongly alkaline (pH 8.6).

#### Typical Pedon Location

*Soil name and map unit in which located:* Tomel gravelly fine sandy loam, 2 to 4 percent slopes, in Laxal-Tomel association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 22 miles south of Austin, in the Big Smoky Valley; about 300 feet north and 3,000 feet east of the southwest corner of sec. 5, T. 15 N., R. 44 E.

#### Range in Characteristics

*Soil moisture content:* Usually dry, but moist in some part for short periods in winter and early in spring and for 10 to 20 days cumulatively between July and October as a result of convection storms

*Average annual soil temperature:* 53 to 59 degrees F

*Depth to the duripan:* 10 to 20 inches

*Other characteristics:* Thin Bqk horizon immediately above the duripan in some pedons

*Control section (when mixed):*

Content of clay—20 to 30 percent

Content of rock fragments—35 to 50 percent, mainly pebbles

Texture—clay loam or sandy clay loam

*A horizon:*

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3

Structure—massive or platy

*BA horizon (when present):*

Value—7 or 8 dry, 4 or 5 moist

Chroma—2 or 3

*Bt1 horizon:*

Value—5 or 6 dry, 3 to 5 moist

Chroma—3 or 4

Structure—prismatic or angular blocky

Content of rock fragments—10 to 35 percent

*Bt2 horizon:*

Structure—massive or subangular blocky

Content of rock fragments—40 to 65 percent

*Bqk horizon:*

Value—6 or 7 dry, 4 to 6 moist

Chroma—1 to 3

Content of rock fragments—50 to 75 percent

*Bqkm horizon:*

Value—6 to 8 dry; 4, 5, or 7 moist

Chroma—2 to 4

### Torripsammentic Haploxerolls

*Depth class:* Very shallow to moderately deep

*Drainage class:* Well drained

*Parent material:* Residuum derived from granite

*Positions on landscape:* Side slopes of mountains

*Slope:* 30 to 50 percent

*Mean annual precipitation:* About 15 inches

*Mean annual temperature:* About 44 degrees F

**Taxonomic class:** Torripsammentic Haploxerolls

#### Representative Pedon

About 10 percent of the surface is covered with pebbles and 10 percent with cobbles.

O—1 inch to 0; undecomposed pine needles and litter.

A1—0 to 2 inches; brown (10YR 5/3) cobbly loamy coarse sand, very dark brown (10YR 2/2) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine roots; common very fine and fine interstitial pores; 5 percent pebbles and 10 percent cobbles; neutral (pH 6.8); abrupt smooth boundary.

A2—2 to 4 inches; brown (10YR 5/3) coarse sandy loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine and fine interstitial pores; 5 percent pebbles; mildly alkaline (pH 7.4); clear smooth boundary.

C—4 to 7 inches; pale brown (10YR 6/3) loamy coarse sand, dark brown (10YR 3/3) moist; single grain; loose, nonsticky and nonplastic; common fine and medium roots; common very fine and fine interstitial pores; 5 percent pebbles; mildly alkaline (pH 7.6); clear wavy boundary.

Cr—7 to 21 inches; soft, weathered granite.

#### Typical Pedon Location

*Soil name and map unit in which located:*

Torripsammentic Haploxerolls cobbly loamy coarse sand in Typic Argixerolls-Torripsammentic Haploxerolls-Glean association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 0.5 mile southwest of Austin; about 400 feet east and 500 feet north of the southwest corner of sec. 19, T. 19 N., R. 44 E.

#### Range in Characteristics

*Soil moisture content:* Moist in October through June, dry in summer and early in fall

*Average annual soil temperature:* 43 to 46 degrees F

*Depth to paralithic contact:* 5 to 30 inches

*Reaction:* Neutral or mildly alkaline, commonly increasing in alkalinity with increasing depth

*Control section:*

Texture—loamy sand or loamy coarse sand  
 Content of clay—5 to 12 percent  
 Content of rock fragments—0 to 10 percent pebbles and cobbles

*A horizon:*

Value—4 or 5 dry

*C horizon:*

Value—5 to 7 dry, 3 to 5 moist  
 Chroma—2 to 4

**Torro Series**

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Residuum and colluvium that is derived from chert and shale and includes some loess and volcanic ash

*Positions on landscape:* Side slopes of mountains

*Slope:* 15 to 75 percent

*Mean annual precipitation:* About 14 inches

*Mean annual temperature:* About 42 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, frigid Aridic Argixerolls

**Typical Pedon**

About 65 percent of the surface is covered with pebbles and 15 percent with cobbles.

A1—0 to 2 inches; brown (10YR 5/3) extremely gravelly loam, dark brown (10YR 3/3) moist; weak medium platy structure; soft, very friable, nonsticky and nonplastic; many very fine roots; many very fine vesicular pores; 45 percent pebbles and 15 percent cobbles; neutral (pH 7.0); abrupt smooth boundary.

A2—2 to 6 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and common fine roots; many very fine tubular pores; 30 percent pebbles and 5 percent cobbles; neutral (pH 7.0); clear wavy boundary.

A3—6 to 10 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine, medium, and coarse roots; common very fine tubular pores; 25 percent pebbles and 5 percent cobbles; neutral (pH 7.2); clear wavy boundary.

Bt1—10 to 18 inches; light yellowish brown (10YR 6/4) extremely gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky

structure; hard, very friable, very sticky and plastic; common very fine and few medium roots; common very fine tubular pores; common moderately thick clay films on faces of peds; 60 percent pebbles and 15 percent cobbles; neutral (pH 7.2); clear wavy boundary.

Bt2—18 to 34 inches; pale brown (10YR 6/3) extremely gravelly clay loam, dark brown (10YR 4/3) moist; moderate fine and medium angular blocky structure; hard, friable, very sticky and plastic; few fine and medium roots; few fine tubular pores; common moderately thick clay films on faces of peds; 60 percent pebbles and 5 percent cobbles; neutral (pH 7.3); clear wavy boundary.

C1—34 to 45 inches; light yellowish brown (10YR 6/4) extremely gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; few medium roots; common fine interstitial pores; 55 percent pebbles and 5 percent cobbles; neutral (pH 7.3); gradual wavy boundary.

C2—45 to 60 inches; pale brown (10YR 6/3) extremely gravelly sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; few medium roots; common fine interstitial pores; 55 percent pebbles and 5 percent cobbles; neutral (pH 7.3).

**Typical Pedon Location**

*Soil name and map unit in which located:* Torro extremely gravelly loam, 30 to 50 percent slopes, in Torro-Itca-Softscrabble association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 38 miles southwest of Austin; in an unsectionalized area about 2,000 feet west and 1,000 feet south of the northeast corner of the assumed sec. 10, T. 16 N., R. 38 E.

**Range in Characteristics**

*Soil moisture content:* Dry in July to mid-October, moist in some part in mid-October through June

*Average annual soil temperature:* 43 to 46 degrees F

*Thickness of the mollic epipedon:* 10 to 14 inches

*Combined thickness of the A and Bt horizons:* 24 to 40 inches

*Control section:*

Texture—extremely gravelly loam, clay loam, or sandy clay loam

Content of clay—20 to 30 percent

Content of rock fragments—60 to 75 percent, mainly angular, pebble-sized chert and shale fragments

*A horizon:*

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3

Structure—weak or moderate, very fine to coarse, and subangular blocky; weak or moderate, very thin to thick, and platy; or weak or moderate, very fine or fine, and angular blocky

**Bt horizon:**

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4

Structure—weak or moderate, fine or medium, and angular or subangular blocky

Consistence—slightly hard or hard (dry), very friable or friable (moist), sticky or very sticky and slightly plastic or plastic (wet)

Other characteristics—few or common, thin or moderately thick clay films lining pores, bridging and coating sand grains, or coating faces of peds

**C horizon:**

Value—5 or 6 moist

Chroma—3 or 4

Texture—extremely gravelly sandy loam or loamy sand

## Trunk Series

**Depth class:** Moderately deep

**Drainage class:** Well drained

**Parent material:** Residuum and colluvium derived from quartzite, chert, andesite, and rhyolite

**Positions on landscape:** Crests and side slopes of mountains and foothills

**Slope:** 30 to 50 percent

**Mean annual precipitation:** About 9 inches

**Mean annual temperature:** About 47 degrees F

**Taxonomic class:** Fine, montmorillonitic, mesic Xerollic Haplargids

### Typical Pedon

About 15 percent of the surface is covered with pebbles and 10 percent with cobbles.

**A**—0 to 5 inches; pale brown (10YR 6/3) cobbly loam, dark brown (10YR 4/3) moist; weak fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine interstitial pores; 10 percent pebbles and 15 percent cobbles; mildly alkaline (pH 7.6); clear smooth boundary.

**Bt**—5 to 11 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; strong very fine subangular blocky structure; hard, firm, sticky and plastic; common very fine, fine, and medium roots; common very fine and fine

interstitial pores; few thin clay films on faces of peds; 15 percent pebbles and 5 percent cobbles; mildly alkaline (pH 7.8); clear wavy boundary.

**Btk1**—11 to 17 inches; yellowish brown (10YR 5/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; strong fine prismatic structure parting to strong fine angular blocky; very hard, very firm, very sticky and very plastic; few very fine and fine roots; common very fine and fine tubular pores; many moderately thick clay films lining pores and on faces of peds; 15 percent pebbles and 10 percent cobbles; common fine lime filaments and seams; strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

**Btk2**—17 to 28 inches; brownish yellow (10YR 6/6) gravelly clay, dark yellowish brown (10YR 4/6) moist; strong medium prismatic structure parting to strong fine angular blocky; very hard, very firm, very sticky and very plastic; few very fine, fine, and coarse roots; common very fine and fine tubular pores; many moderately thick clay films lining pores and on faces of peds; 15 percent pebbles and 10 percent cobbles; common fine lime filaments and seams; violently effervescent; moderately alkaline (pH 8.4); clear irregular boundary.

**2R**—28 inches; fractured andesite; lime coatings on fracture planes.

### Typical Pedon Location

**Soil name and map unit in which located:** Trunk cobbly loam, 30 to 50 percent slopes, in Trunk-Burrita-Rock outcrop association

**Location in Nevada:** Lander County, Nevada, North Part, survey area; about 31 miles southwest of Battle Mountain; about 2,500 feet west and 1,250 feet south of the northeast corner of sec. 21, T. 26 N., R. 40 E.

### Range in Characteristics

**Soil moisture content:** Moist late in fall, in winter, and early in spring, dry late in May through October

**Average annual soil temperature:** 48 to 53 degrees F

**Depth to bedrock:** 20 to 40 inches

**Depth to lime accumulation:** 10 to 20 inches

**A horizon:**

Value—5 or 6 dry, 3 to 5 moist

Chroma—2 or 3

Reaction—neutral or mildly alkaline

**Bt horizon:**

Hue—10YR or 7.5YR

Value—5 or 6 dry, 4 or 5 moist

Chroma—3 or 4

Texture—gravelly clay loam or gravelly clay that is more than 30 percent sand

- Content of clay—35 to 50 percent
- Content of rock fragments—15 to 35 percent, mainly pebbles
- Reaction—neutral or mildly alkaline in the upper part, moderately alkaline or strongly alkaline in the lower part
- Other characteristics—noncalcareous in the upper part, calcareous in the lower part

### ***Tulase Series***

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Silty alluvium that is derived from various kinds of rock and includes some loess and volcanic ash

*Positions on landscape:* Lagoons, inset fans, fan skirts

*Slope:* 0 to 8 percent

*Mean annual precipitation:* About 10 inches

*Mean annual temperature:* About 48 degrees F

**Taxonomic class:** Coarse-silty, mixed (calcareous), mesic Durorthidic Xeric Torriorthents

#### **Typical Pedon**

- A1—0 to 2 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; weak medium platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine vesicular pores; strongly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.
- A2—2 to 6 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium and coarse roots; common very fine and fine tubular pores; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary.
- C—6 to 11 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine and fine tubular pores; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary.
- Cq—11 to 21 inches; very pale brown (10YR 7/3) very fine sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, slightly sticky and nonplastic; common very fine and fine roots; common very fine and fine tubular pores; 30 percent strong durinodes 10 to 25 millimeters in

diameter; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary.

- Cqk1—21 to 36 inches; very pale brown (10YR 7/3) very fine sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; few very fine and fine tubular pores; 45 percent strong durinodes 10 to 25 millimeters in diameter; 20 percent discontinuous weak silica cementation; common fine lime filaments; violently effervescent; strongly alkaline (pH 9.0); gradual wavy boundary.
- Cqk2—36 to 60 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; few very fine and fine tubular pores; 30 percent strong durinodes 10 to 25 millimeters in diameter; 10 percent discontinuous weak silica cementation; common fine lime and gypsum filaments; violently effervescent; strongly alkaline (pH 9.0).

#### **Typical Pedon Location**

*Soil name and map unit in which located:* Tulase silt loam, 2 to 8 percent slopes, in Tulase-Bubus-McConnel association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 28 miles southeast of Battle Mountain; about 2,500 feet east and 100 feet north of the southwest corner of sec. 18, T. 26 N., R. 48 E.

#### **Range in Characteristics**

*Soil moisture content:* Moist in winter and spring, dry late in June through October

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to the Cq horizon:* 11 to 20 inches

*A horizon:*

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3

*C horizon:*

Value—4 or 5 moist

*Cq and Cqk horizons:*

Texture—silt loam or very fine sandy loam

Other characteristics—20 to 50 percent durinodes; as much as 30 percent discontinuous silica and lime cementation common in the Cqk horizon in most pedons

### ***Typic Argixerolls***

*Depth class:* Shallow and moderately deep

*Drainage class:* Well drained

*Parent material:* Residuum derived from granite  
*Positions on landscape:* Side slopes of mountains  
*Slope:* 15 to 50 percent  
*Mean annual precipitation:* About 14 inches  
*Mean annual temperature:* About 43 degrees F

**Taxonomic class:** Typic Argixerolls

#### **Representative Pedon**

About 30 percent of the surface is covered with pebbles.

A1—0 to 2 inches; dark grayish brown (10YR 4/2) gravelly coarse sandy loam, very dark brown (10YR 2/2) moist; weak medium platy structure; soft, very friable, nonsticky and nonplastic; few very fine roots; common fine vesicular and interstitial pores; 15 percent pebbles; neutral (pH 7.0); clear smooth boundary.

A2—2 to 4 inches; dark grayish brown (10YR 4/2) coarse sandy loam, very dark brown (10YR 2/2) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine tubular pores; 5 percent pebbles; neutral (pH 7.0); clear smooth boundary.

Bt1—4 to 10 inches; grayish brown (10YR 5/2) sandy clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common very fine tubular pores; few thin clay films bridging mineral grains; 5 percent pebbles; neutral (pH 6.8); clear smooth boundary.

Bt2—10 to 15 inches; brown (10YR 5/3) sandy clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, very sticky and very plastic; common very fine and fine roots; few very fine tubular pores; common thin clay films on faces of peds; 5 percent pebbles; neutral (pH 6.8); clear irregular boundary.

Cr—15 to 25 inches; soft, weathered granite.

#### **Typical Pedon Location**

*Soil name and map unit in which located:* Typic Argixerolls gravelly coarse sandy loam in Typic Argixerolls-Torripsammentic Haploxerolls-Glean association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 0.5 mile north of Austin; about 800 feet south and 250 feet west of the northeast corner of sec. 19, T. 19 N., R. 44 E.

#### **Range in Characteristics**

*Soil moisture content:* Moist in November to early in July, dry late in July through October

*Average annual soil temperature:* 42 to 46 degrees F  
*Thickness of the mollic epipedon:* 10 to 20 inches  
*Depth to paralithic contact:* 10 to 40 inches

#### **Control section:**

Texture—sandy clay loam, sandy loam, or loam  
 Content of clay—18 to 30 percent  
 Content of rock fragments—0 to 15 percent, mainly pebbles  
 Reaction—neutral or mildly alkaline

#### **A horizon:**

Value—4 or 5 dry, 2 or 3 moist  
 Chroma—2 or 3

#### **Bt horizon:**

Value—4 or 5 dry, 3 or 4 moist  
 Chroma—3 or 4

### **Umbreland Series**

*Depth class:* Very deep

*Drainage class:* Somewhat poorly drained

*Parent material:* Silty lacustrine sediment derived from various kinds of rock

*Positions on landscape:* Lake plains, alluvial flats, lake-plain terrace remnants

*Slope:* 0 to 2 percent

*Mean annual precipitation:* About 6 inches

*Mean annual temperature:* About 49 degrees F

**Taxonomic class:** Fine, montmorillonitic (calcareous), mesic Aeric Halaquepts

#### **Typical Pedon**

A—0 to 3 inches; light brownish gray (2.5Y 6/2) silt loam, dark grayish brown (2.5Y 4/2) moist; strong very fine granular structure; slightly hard, friable, sticky and plastic; few fine and medium roots; many very fine interstitial pores; violently effervescent; very strongly alkaline (pH 9.6); abrupt smooth boundary.

C1—3 to 11 inches; light brownish gray (2.5Y 6/2) silty clay loam, dark grayish brown (2.5Y 4/2) moist; common coarse distinct light olive brown (2.5Y 5/4) and brown (10YR 4/3) mottles; moderate medium prismatic structure parting to strong fine granular; hard, firm, very sticky and very plastic; few fine and medium roots and common very fine and coarse roots; few fine and medium tubular pores; many fine salt masses; violently effervescent; very strongly alkaline (pH 9.4); clear smooth boundary.

C2—11 to 24 inches; light olive gray (5Y 6/2) silty clay loam, olive gray (5Y 5/2) moist; common coarse distinct grayish brown (2.5Y 5/2) mottles; moderate medium angular blocky structure; hard, firm, very

sticky and very plastic; few fine roots; common very fine and fine tubular pores; violently effervescent; very strongly alkaline (pH 9.2); clear wavy boundary.

Ck1—24 to 41 inches; light olive gray (5Y 6/2) silty clay loam, olive gray (5Y 4/2) moist; common coarse distinct greenish gray (5GY 6/1) and light gray (N 7/0) mottles; moderate medium angular blocky structure; hard, firm, very sticky and very plastic; common very fine, fine, and medium tubular pores; few medium lime nodules; violently effervescent; very strongly alkaline (pH 9.0); gradual wavy boundary.

Ck2—41 to 60 inches; light gray (5Y 7/2) silty clay loam, olive gray (5Y 5/2) moist; massive; hard, firm, very sticky and very plastic; common very fine and many fine tubular pores; violently effervescent; strongly alkaline (pH 8.6).

#### Typical Pedon Location

*Soil name and map unit in which located:* Umberland silt loam, 0 to 2 percent slopes, in Umberland-Wendane association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; 20 miles southeast of Austin; about 2,200 feet south and 2,600 feet east of the northwest corner of sec. 25, T. 16 N., R. 44 E.

#### Range in Characteristics

*Soil moisture content:* Saturated in some part between depths of 20 and 40 inches for at least one month in most years, moist to within 6 inches of the surface as a result of the capillary fringe

*Average annual soil temperature:* 47 to 52 degrees F

*Other characteristics:* Concretions or nodules of lime present at a depth of 15 to 35 inches

#### Control section:

Texture—dominantly silty clay loam or silty clay, but strata of clay present in some pedons

Content of clay—35 to 50 percent

Other characteristics—strongly affected by salt and sodium in the upper part; concentrations of salt and sodium generally decrease with increasing depth

#### A horizon:

Hue—10YR, 2.5Y, or 5Y

Value—6 to 8 dry, 4 to 6 moist

Chroma—2 to 4

Structure—strong, very fine or fine, and granular (as a result of flocculation), or massive

#### C horizon:

Hue—2.5Y or 5Y

Value—6 to 8 dry, 4 to 6 moist

Chroma—2 to 4

Reaction—strongly alkaline or very strongly alkaline, commonly decreasing in alkalinity with increasing depth

### Unius Series

*Depth class:* Shallow to duripan

*Drainage class:* Well drained

*Parent material:* Mixed alluvium that is derived from volcanic and sedimentary rock and includes some loess and volcanic ash

*Positions on landscape:* Fan piedmont remnants

*Slope:* 2 to 15 percent

*Mean annual precipitation:* About 10 inches

*Mean annual temperature:* About 45 degrees F

**Taxonomic class:** Loamy, mixed, mesic, shallow

Haploxerollic Durorthids

#### Typical Pedon

About 50 percent of the surface is covered with pebbles.

A1—0 to 2 inches; pale brown (10YR 6/3) gravelly silt loam, brown (10YR 4/3) moist; moderate thick platy structure; slightly hard, friable, slightly sticky and slightly plastic; very few very fine and fine roots; common very fine and fine vesicular pores; strongly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

A2—2 to 4 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, friable, sticky and plastic; few medium roots and common very fine and fine roots; common very fine and fine interstitial pores; strongly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.

Bw1—4 to 8 inches; light yellowish brown (10YR 6/4) silt loam, yellowish brown (10YR 5/4) moist; moderate medium and fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common very fine interstitial pores; few thin clay films on peds and in pores; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

Bw2—8 to 12 inches; white (10YR 8/2) gravelly loam, light yellowish brown (10YR 6/4) moist; moderate medium angular blocky structure; hard, firm, sticky and slightly plastic; common very fine and fine roots; common very fine interstitial pores; 20 percent pebbles and duripan fragments; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary.



**Bqkm**—12 to 22 inches; white (10YR 8/2), strongly cemented duripan, light gray (10YR 7/2) moist; massive; very hard, very firm; brittle; very few very fine roots; very few very fine interstitial pores; violently effervescent; strongly alkaline (pH 8.8); clear wavy boundary.

**Cqk**—22 to 44 inches; white (10YR 8/2) gravelly fine sandy loam, very pale brown (10YR 7/3) moist; massive; hard, firm, nonsticky and nonplastic; continuous weak silica cementation with strongly cemented strata; 25 percent pebbles and duripan fragments; violently effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary.

**2Ck**—44 to 60 inches; very pale brown (10YR 7/3) gravelly loamy sand, pale brown (10YR 6/3) moist; single grain; loose, nonsticky and nonplastic; 20 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2).

#### Typical Pedon Location

*Soil name and map unit in which located:* Unius gravelly silt loam, 2 to 8 percent slopes, in Unius-Orovada association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 26 miles east of Austin, in the Monitor Valley; about 1,000 feet east and 1,200 feet south of the northwest corner of sec. 17, T. 18 N., R. 48 E.

#### Range in Characteristics

*Soil moisture content:* Moist in some part from November through May, dry in June through October

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to the duripan:* 10 to 20 inches

*Reaction:* Mildly alkaline to strongly alkaline

*Calcium carbonate equivalent:* 5 to 15 percent

#### Control section:

Content of clay—18 to 25 percent

Content of rock fragments—0 to 25 percent pebbles and duripan fragments

#### A horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3

Effervescence—slightly effervescent or strongly effervescent

#### Bw1 horizon:

Value—5 or 6 dry, 4 or 5 moist

Chroma—2 to 4

Texture—silt loam or loam

Content of rock fragments—0 to 10 percent

#### Bw2 horizon (when present):

Value—6 to 8 dry, 4 to 6 moist

Chroma—2 to 4

Texture—gravelly loam, gravelly silt loam, or loam

Content of rock fragments—10 to 30 percent pebbles and duripan fragments

#### Bqkm horizon:

Value—6 to 8 dry, 5 or 6 moist

Chroma—2 to 4

Other characteristics—dominantly strongly cemented, but some weakly cemented strata

#### 2Ck horizon:

Content of rock fragments—15 to 30 percent pebbles

### Unsel Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Mixed alluvium

*Positions on landscape:* Fan piedmont remnants

*Slope:* 0 to 4 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* 51 degrees F

**Taxonomic class:** Fine-loamy, mixed, mesic Duric Haplargids

#### Typical Pedon

About 80 percent of the surface is covered with pebbles.

**A1**—0 to 3 inches; light gray (10YR 7/2) gravelly fine sandy loam, brown (10YR 5/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and nonplastic; few very fine roots; many very fine and common fine interstitial pores; 20 percent pebbles; strongly alkaline (pH 8.6); clear smooth boundary.

**A2**—3 to 8 inches; light gray (10YR 7/2) gravelly fine sandy loam, brown (10YR 5/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and nonplastic; few very fine roots; many very fine interstitial pores and common very fine tubular pores; 15 percent pebbles; strongly alkaline (pH 8.6); abrupt smooth boundary.

**Bt**—8 to 13 inches; very pale brown (10YR 7/3) gravelly clay loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots; many very fine tubular pores; common thin clay films on faces of peds; 20 percent pebbles; strongly effervescent; strongly alkaline (pH 8.6); clear wavy boundary.

**Btk**—13 to 18 inches; very pale brown (10YR 7/3) gravelly clay loam, yellowish brown (10YR 5/4)

moist; moderate medium and fine subangular blocky structure; hard, friable, sticky and plastic; many very fine roots; common very fine tubular pores; common thin clay films on faces of peds; 25 percent pebbles; thick lime coatings on the underside of pebbles; violently effervescent; strongly alkaline (pH 9.0); gradual wavy boundary.

**Bqk**—18 to 31 inches; very pale brown (10YR 7/3) gravelly sandy clay loam, light yellowish brown (10YR 6/4) moist; moderate medium and fine subangular blocky structure; hard, friable, sticky and plastic; many very fine roots; common very fine tubular pores; 60 percent discontinuous strong cementation; 35 percent pebbles; thick lime and silica coatings on the underside of pebbles; violently effervescent; strongly alkaline (pH 8.6); gradual wavy boundary.

**2C**—31 to 60 inches; very pale brown (10YR 7/3) extremely gravelly loamy sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; many very fine roots; many fine interstitial pores; 65 percent pebbles; violently effervescent; strongly alkaline (pH 8.8).

#### Typical Pedon Location

*Soil name and map unit in which located:* Unsel gravelly fine sandy loam, 2 to 4 percent slopes, in Unsel-Wardenot-Belted association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 25 miles south of Austin; about 2,000 feet north and 40 feet east of the southwest corner of sec. 26, T. 16 N., R. 45 E.

#### Range in Characteristics

*Soil moisture content:* Usually dry, but moist in some part for short periods in winter and early in spring and for 10 to 20 days cumulatively between July and October as a result of convection storms

*Average annual soil temperature:* 53 to 59 degrees F

*Depth to the Bqk horizon:* 10 to 22 inches

*Depth to the 2C horizon:* 20 to 36 inches

#### Control section:

Texture—clay loam or sandy clay loam

Content of clay—27 to 35 percent

Content of rock fragments—15 to 30 percent

#### A horizon:

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 to 4 dry or moist

Structure—platy, subangular blocky, or massive

Reaction—moderately alkaline to very strongly alkaline

#### Bt and Btk horizons:

Value—5 to 7 dry, 3 to 6 moist

Chroma—2 to 4

Content of clay—27 to 35 percent

Texture—clay loam or sandy clay loam

Content of rock fragments—15 to 30 percent

Structure—weak or moderate, fine or medium, and subangular blocky; weak, medium or coarse, and prismatic; or massive

Reaction—mildly alkaline to strongly alkaline

#### Bqk horizon:

Value—7 or 8 dry, 4 to 6 moist

Chroma—2 to 4

#### 2C horizon:

Value—7 or 8 dry, 3 to 5 moist

Chroma—2 to 4

Content of rock fragments—50 to 70 percent

### Unsel Variant

*Depth class:* Moderately deep

*Drainage class:* Well drained

*Parent material:* Residuum and colluvium derived from tuffaceous sediment

*Positions on landscape:* Side slopes of fan piedmonts

*Slope:* 15 to 30 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 49 degrees F

**Taxonomic class:** Fine-loamy, mixed, mesic Duric Haplargids

#### Typical Pedon

About 45 percent of the surface is covered with pebbles and 15 percent with cobbles.

**A**—0 to 2 inches; light gray (10YR 7/2) very gravelly loam, brown (10YR 5/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and nonplastic; few fine roots; common very fine and few fine vesicular pores; 40 percent pebbles; moderately alkaline (pH 8.2); abrupt smooth boundary.

**BA**—2 to 4 inches; light gray (10YR 7/2) very gravelly clay loam, brown (10YR 5/3) moist; strong thin platy structure; slightly hard, friable, sticky and plastic; few fine and very fine roots; common fine vesicular pores and few very fine tubular pores; 30 percent pebbles and 10 percent cobbles; moderately alkaline (pH 8.4); abrupt smooth boundary.

**Bt**—4 to 11 inches; pale brown (10YR 6/3) gravelly clay loam, dark brown (10YR 4/3) moist; common white (10YR 8/2) bleached faces of peds concentrated in the lower part; strong medium angular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common very fine

and fine tubular pores; common thin and moderately thick clay films on peds; 20 percent pebbles; moderately alkaline (pH 8.2); clear smooth boundary.

**Btk**—11 to 15 inches; very pale brown (10YR 7/3) gravelly clay loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few very fine and fine roots; common very fine and fine tubular pores; many thin and common moderately thick clay films on peds; 25 percent pebbles; strongly effervescent; very strongly alkaline (pH 9.2); clear wavy boundary.

**Bqk**—15 to 22 inches; very pale brown (10YR 7/3) gravelly loam, brown (10YR 5/3) moist; massive; hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; few very fine tubular pores; 30 percent medium durinodes; few thin silica pendants on the underside of rock fragments; 25 percent pebbles; strongly effervescent; very strongly alkaline (pH 9.2); clear wavy boundary.

**Cr**—22 to 46 inches; soft tuff.

#### Typical Pedon Location

*Soil name and map unit in which located:* Unsel Variant very gravelly loam, 30 to 50 percent slopes, in Grassval-Grina-Unsel Variant association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 36 miles south of Battle Mountain; about 300 feet south and 1,400 feet west of the northeast corner of sec. 22, T. 26 N., R. 46 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in May to early in November

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to soft bedrock:* 20 to 40 inches

*Reaction:* Moderately alkaline to very strongly alkaline, increasing in alkalinity with increasing depth

#### Control section:

Content of clay—27 to 35 percent

Content of rock fragments—20 to 30 percent when mixed, mainly pebbles

#### A horizon:

Hue—10YR or 2.5Y

Chroma—2 to 4

#### Bt horizon:

Hue—10YR or 2.5Y

Value—6 to 8 dry, 4 to 6 moist

Chroma—2 to 4

Exchangeable sodium percentage—less than 5 in the upper part, 5 to 15 in the lower part

#### Bqk horizon:

Hue—10YR or 2.5Y

Value—6 to 8 dry, 5 or 6 moist

Chroma—2 to 4

Texture—loam or sandy loam

Content of rock fragments—20 to 30 percent when mixed, mainly pebbles

Other characteristics—20 to 50 percent durinodes or discontinuous weak silica cementation

### Valmy Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Thin loess cap that is high in content of volcanic ash over loamy alluvium

*Positions on landscape:* Inset fans, fan skirts

*Slope:* 0 to 2 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 51 degrees F

*Taxonomic class:* Coarse-loamy, mixed (calcareous), mesic Durorthidic Torriorthents

#### Typical Pedon

**A1**—0 to 3 inches; light brownish gray (10YR 6/2) very fine sandy loam, dark grayish brown (10YR 4/2) moist; weak medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; many very fine vesicular pores; 5 percent pebbles; slightly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.

**A2**—3 to 6 inches; light brownish gray (10YR 6/2) fine sandy loam, dark grayish brown (10YR 4/2) moist; weak medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; common very fine tubular pores; 5 percent pebbles; slightly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary.

**C**—6 to 18 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; few very fine tubular pores; 10 percent pebbles; strongly effervescent; very strongly alkaline (pH 9.2); gradual wavy boundary.

**Cqk**—18 to 29 inches; pale brown (10YR 6/3) fine sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; few very fine tubular pores; 40 percent hard, firm durinodes 3 to 30 millimeters in diameter; 5 percent pebbles; strongly effervescent; very strongly alkaline (pH 9.4); gradual wavy boundary.

Ck—29 to 46 inches; light yellowish brown (2.5Y 6/4) fine sandy loam, light olive brown (2.5Y 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; few very fine tubular pores; 5 percent pebbles; strongly effervescent; very strongly alkaline (pH 9.2); clear wavy boundary.

2C'qk—46 to 60 inches; light brownish gray (2.5Y 6/2) silty clay loam, olive brown (2.5Y 4/4) moist; massive; hard, firm, sticky and plastic; few very fine tubular pores; 90 percent discontinuous weak cementation; strongly effervescent; strongly alkaline (pH 8.4).

### Typical Pedon Location

*Soil name and map unit in which located:* Valmy very fine sandy loam, silty substratum, 0 to 2 percent slopes, in Batan-Wendane-Valmy association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 33 miles southeast of Battle Mountain; about 2,300 feet north and 300 feet west of the southeast corner of sec. 7, T. 27 N., R. 48 E.

### Range in Characteristics

*Soil moisture content:* Moist for short periods in winter and spring, dry in May through November

*Average annual soil temperature:* 47 to 53 degrees F

*Depth to the Cq horizon:* 8 to 20 inches

*Content of durinodes:* Ranges from 5 to 85 percent in individual layers, including more than 25 percent in one or more layers that are more than 6 inches thick

*Depth to unconformable material:* Dominantly 30 to 50 inches, but more than 50 inches to sandy material in some pedons

### Control section:

Texture—dominantly fine sandy loam or sandy loam, but strata of very fine sandy loam or coarse sandy loam in some pedons

Content of clay—5 to 15 percent

Content of rock fragments—0 to 30 percent, mainly pebbles

### A horizon:

Hue—10YR or 2.5Y

Value—5 or 6 dry, 3 or 4 moist

Reaction—moderately alkaline or strongly alkaline

### C horizon:

Hue—10YR or 2.5Y

Value—5 to 7 dry, 4 or 5 moist

Chroma—2 to 4

Reaction—strongly alkaline or very strongly alkaline

Effervescence—slightly effervescent to violently effervescent

Other characteristics—contains durinodes that are hard to extremely hard, firm or very firm, or brittle

### 2C horizon:

Texture—dominantly gravelly sand or very gravelly sand, but strata of silty clay loam below a depth of 40 inches in some pedons

Content of clay—1 to 5 percent

Content of rock fragments—20 to 55 percent

Reaction—strongly alkaline or very strongly alkaline

## Walti Series

*Depth class:* Moderately deep

*Drainage class:* Well drained

*Parent material:* Colluvium and residuum derived from rhyolite, andesite, dacite, tuff, and quartzite

*Positions on landscape:* Crests and side slopes of mountains

*Slope:* 8 to 50 percent

*Mean annual precipitation:* About 14 inches

*Mean annual temperature:* About 44 degrees F

**Taxonomic class:** Fine, montmorillonitic, frigid Aridic Argixerolls

### Typical Pedon

About 20 percent of the surface is covered with pebbles and 40 percent with cobbles and stones.

A—0 to 4 inches; grayish brown (10YR 5/2) extremely cobbly loam, dark brown (10YR 3/3) moist; weak thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine vesicular pores; 35 percent pebbles and 25 percent cobbles; neutral (pH 6.8); clear smooth boundary.

Bt1—4 to 10 inches; brown (7.5YR 5/2) gravelly clay loam, dark brown (7.5YR 3/2) moist; moderate fine angular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots and few medium and coarse roots; common very fine and fine tubular pores; common thin clay films on peds; 15 percent pebbles and 5 percent cobbles; neutral (pH 7.0); abrupt wavy boundary.

2Bt2—10 to 24 inches; brown (7.5YR 5/4) clay, dark brown (7.5YR 3/4) moist; moderate medium prismatic structure parting to moderate medium angular blocky; very hard, firm, very sticky and very plastic; few very fine and fine roots along faces of peds; common very fine and fine tubular pores; common moderately thick clay films on peds; 10 percent pebbles; neutral (pH 7.0); gradual wavy boundary.

2Bt3—24 to 30 inches; pinkish gray (7.5YR 6/2) clay, dark brown (7.5YR 4/2) moist; weak medium prismatic structure; very hard, firm, very sticky and very plastic; few fine roots; few very fine and fine tubular pores; common thin clay films on faces of peds; 10 percent pebbles; neutral (pH 7.0); abrupt wavy boundary.

3R—30 inches; fractured andesite.

#### Typical Pedon Location

*Soil name and map unit in which located:* Walti extremely cobbly loam, 30 to 50 percent slopes, in Walti-Softscrabble-Bucan association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 17 miles west of Austin; about 1,300 feet east and 2,275 feet south of the northeast corner of sec. 14, T. 20 N., R. 46 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry late in June to mid-October

*Average annual soil temperature:* 44 to 46 degrees F

*Thickness of the mollic epipedon:* 7 to 12 inches (commonly includes the upper part of the argillic horizon)

*Depth to bedrock:* 20 to 30 inches

#### Control section:

Content of clay—40 to 50 percent

Content of rock fragments—5 to 25 percent, mainly pebbles

Reaction—neutral or mildly alkaline

#### A horizon:

Value—4 or 5 dry

Chroma—2 or 3

#### Bt horizon:

Hue—10YR or 7.5YR

Value—dominantly 4 or 5 dry, but 6 dry in the lower part; 3 or 4 moist

Chroma—3 or 4

Texture—clay loam or gravelly clay loam that is 27 to 35 percent clay in the upper part, clay or gravelly clay that is 50 to 60 percent clay in the lower part

Content of rock fragments—5 to 25 percent, mostly pebbles and cobbles

Structure—prismatic or angular blocky

### Wardenot Series

*Depth class:* Very deep

*Drainage class:* Excessively drained

*Parent material:* Alluvium derived from various kinds of rock

*Positions on landscape:* Fan skirts, inset fans

*Slope:* 2 to 4 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 51 degrees F

**Taxonomic class:** Sandy-skeletal, mixed, mesic Typic Torriorthents

#### Typical Pedon

A—0 to 5 inches; pale brown (10YR 6/3) gravelly fine sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; common fine and very fine roots; many very fine vesicular pores; 20 percent pebbles; strongly alkaline (pH 8.8); clear smooth boundary.

Bk—5 to 9 inches; very pale brown (10YR 7/3) gravelly very fine sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; common very fine and few fine roots; many very fine tubular pores; 25 percent pebbles; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary.

Bqk1—9 to 20 inches; very pale brown (10YR 7/4) very gravelly loamy fine sand, yellowish brown (10YR 5/4) moist; single grain; loose, nonsticky and nonplastic; many very fine and fine roots; many very fine interstitial pores; 55 percent pebbles; thick lime coatings and pendants and thin silica coatings and pendants on the underside of pebbles; violently effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

Bqk2—20 to 60 inches; very pale brown (10YR 7/3) very gravelly loamy sand, yellowish brown (10YR 5/4) moist; single grain; loose, nonsticky and nonplastic; many very fine and few fine roots; many very fine interstitial pores; 50 percent pebbles; thick lime coatings and pendants and thin silica coatings and pendants on the underside of pebbles; strongly effervescent; moderately alkaline (pH 8.4).

#### Typical Pedon Location

*Soil name and map unit in which located:* Wardenot gravelly fine sandy loam, 2 to 4 percent slopes, in Wardenot-Laxal association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 22 miles south of Austin; about 1,200 feet south and 1,300 feet west of the northeast corner of sec. 14, T. 16 N., R. 45 E.

#### Range in Characteristics

*Soil moisture content:* Usually dry, but moist in some part for short periods in winter and early in spring and for 10 to 20 days cumulatively between July and October as a result of convection storms

*Average annual soil temperature:* 53 to 59 degrees F

*Reaction:* Mildly alkaline or strongly alkaline, commonly increasing in alkalinity with increasing depth

*Control section:*

Texture (of the fraction less than 2 millimeters)—averages loamy sand

Content of rock fragments—40 to 75 percent, including cobbles and stones

*A horizon:*

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3

Effervescence—dominantly noneffervescent to strongly effervescent, but violently effervescent in some pedons that are influenced by eolian deposits

Structure—dominantly massive, platy, or subangular blocky, but single grain at top in some pedons

*Bqk and Bk horizons:*

Value—5 to 7 dry, 3 to 5 moist

Chroma—2 to 4

Texture—stratified extremely gravelly fine sandy loam to cobbly loamy sand, strata of very gravelly or cobbly sandy loam or fine sandy loam in the upper part

Content of rock fragments—averages 40 to 75 percent; individual strata as little as 25 percent

Effervescence—strongly effervescent or violently effervescent

Structure—single grain or massive

Other characteristics—common lime and silica pendants

## **Welch Series**

*Depth class:* Very deep

*Drainage class:* Poorly drained

*Parent material:* Alluvium derived from volcanic rock

*Positions on landscape:* Flood plains and inset fans in narrow mountain valleys

*Slope:* 2 to 8 percent

*Mean annual precipitation:* About 14 inches

*Mean annual temperature:* About 42 degrees F

**Taxonomic class:** Fine-loamy, mixed, frigid Cumulic Haplaquolls

### **Typical Pedon**

A1—0 to 2 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; many very fine roots; many very fine interstitial pores; neutral (pH 7.2); abrupt smooth boundary.

A2—2 to 4 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine interstitial pores; mildly alkaline (pH 7.6); abrupt smooth boundary.

A3—4 to 26 inches; dark gray (10YR 4/1) clay loam, very dark gray (10YR 3/1) moist; few fine distinct reddish yellow (7.5YR 6/6) mottles; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and slightly plastic; many very fine and fine roots and common medium roots; common very fine, fine, and coarse tubular pores; 10 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary.

AC—26 to 30 inches; light brownish gray (10YR 6/2) clay loam, very dark grayish brown (10YR 3/2) moist; common coarse distinct reddish yellow (7.5YR 6/6) mottles; moderate medium and coarse subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine roots; many very fine and common coarse tubular pores; slightly effervescent; mildly alkaline (pH 8.0); clear smooth boundary.

C—30 to 40 inches; light brownish gray (10YR 6/2) clay loam, dark grayish brown (10YR 4/2) moist; common coarse distinct reddish yellow (7.5YR 6/6) mottles; weak medium and coarse subangular blocky structure; slightly hard, friable, sticky and slightly plastic; common very fine roots; many very fine and few coarse tubular pores; mildly alkaline (pH 7.6); abrupt smooth boundary.

Ab—40 to 60 inches; grayish brown (10YR 5/2) silty clay loam, very dark grayish brown (10YR 3/2) moist; common coarse distinct reddish yellow (7.5YR 6/6) mottles; moderate medium and coarse prismatic structure; hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; many very fine and few medium and coarse tubular pores; mildly alkaline (pH 7.6).

### **Typical Pedon Location**

*Map unit in which located:* Welch loam, drained, 2 to 8 percent slopes

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 22 miles southeast of Battle Mountain; about 500 feet south and 1,200 feet west of the northeast corner of sec. 34, T. 29 N., R. 46 E.

### **Range in Characteristics**

*Soil moisture content (undrained areas):* Saturated at or near the surface for at least 1 month, commonly

late in winter and early in spring, in most years; then drops to a depth of 18 to 36 inches from early in spring through September

*Average annual soil temperature:* 42 to 46 degrees F

*Thickness of the mollic epipedon:* 26 to more than 60 inches

*Other characteristics:* Organic matter content of the mollic epipedon decreases irregularly with increasing depth; a buried A horizon commonly present; gravelly strata or strata of silty clay loam, silt loam, clay, loam, very fine sandy loam, or sandy loam present in some pedons

*Control section:*

Texture—dominantly stratified sandy clay loam or clay loam

Content of clay—27 to 35 percent when mixed

Other characteristics—mineralogy is mixed, but the parent material has a high content of vitric pyroclastic material

*A horizon:*

Hue—10YR to 5Y, or neutral

Value—3 to 5 dry, 2 or 3 moist

Chroma—0 to 3 in the upper part, 0 to 2 in the lower part

Structure—weak to strong, thin or medium, and platy; weak or moderate, very fine to medium, and prismatic, granular, or subangular blocky; or massive (only in pedons that have a thicker A horizon)

Consistence—soft to hard (dry), very friable or friable (moist), nonsticky to sticky and slightly plastic to plastic (wet)

Reaction—slightly acid or neutral

Other characteristics—high-chroma, yellowish iron mottles in some pedons

*C horizon:*

Hue—10YR, 5Y to 5B, or neutral

Value—5 to 8 dry, 3 to 5 moist

Chroma—0 or 1

Reaction—slightly acid to mildly alkaline

Other characteristics—high-chroma iron mottles common in many pedons

## **Wendane Series**

*Depth class:* Very deep

*Drainage class:* Somewhat poorly drained

*Parent material:* Silty alluvium derived from volcanic rock, tuff, loess, and volcanic ash

*Positions on landscape:* Alluvial flats

*Slope:* 0 to 2 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 48 degrees F

**Taxonomic class:** Fine-silty, mixed (calcareous), mesic Aeric Halaquepts

### **Typical Pedon**

A1—0 to 1 inch; light gray (10YR 7/2) silt loam, dark grayish brown (10YR 4/2) moist; strong thin platy structure; slightly hard, very friable, slightly sticky and plastic; few medium roots; many very fine and fine interstitial pores; violently effervescent; very strongly alkaline (pH 9.6); abrupt smooth boundary.

A2—1 to 7 inches; light gray (10YR 7/2) silt loam, dark grayish brown (10YR 4/2) moist; few medium distinct white (10YR 8/1) mottles; moderate thin platy structure; slightly hard, friable, sticky and plastic; few medium roots and common very fine and fine roots; common very fine and fine interstitial and tubular pores; common fine lime filaments or threads; violently effervescent; very strongly alkaline (pH 9.6); clear smooth boundary.

C—7 to 18 inches; pale brown (10YR 6/3) silt loam, dark yellowish brown (10YR 4/4) moist; few medium distinct white (10YR 8/1) mottles; moderate medium subangular blocky structure; soft, very friable, sticky and plastic; few medium and fine roots and common very fine and coarse roots; common fine and medium tubular pores; violently effervescent; very strongly alkaline (pH 9.4); clear smooth boundary.

Cqk1—18 to 24 inches; pale brown (10YR 6/3) silty clay loam, dark yellowish brown (10YR 4/4) moist; common medium distinct mottles that are brown (7.5YR 5/4) and gray (5Y 5/1) moist; massive; slightly hard, friable, sticky and plastic; many very fine and fine roots and few medium roots; many very fine and fine and common medium tubular pores; 25 percent strongly cemented durinodes; few moderately thick reoriented silt linings in pores; violently effervescent; strongly alkaline (pH 8.9); clear smooth boundary.

Cqk2—24 to 37 inches; light gray (10YR 7/2) silty clay loam, brown (10YR 4/3) moist; common medium distinct mottles that are brown (7.5YR 5/4) and gray (5Y 5/1) moist; massive; slightly hard, friable, sticky and plastic; many very fine, fine, and medium roots; many very fine, fine, and medium tubular pores; 25 percent strongly cemented durinodes; 10 percent discontinuous weak cementation; few moderately thick reoriented silt linings in pores; violently effervescent; strongly alkaline (pH 8.8); clear wavy boundary.

2Ab—37 to 48 inches; grayish brown (10YR 5/2) silty clay loam, very dark grayish brown (10YR 3/2) moist; many coarse distinct mottles that are dark

grayish brown (10YR 4/2) and gray (5Y 5/1) moist; massive; slightly hard, friable, very sticky and plastic; few fine roots; common fine and medium tubular pores; 10 percent discontinuous weak cementation; few moderately thick reoriented silt linings in pores; violently effervescent; strongly alkaline (pH 8.8); clear smooth boundary.

2C—48 to 62 inches; light gray (10YR 7/2) silty clay loam, light brownish gray (10YR 6/2) moist; massive; slightly hard, friable, very sticky and very plastic; few fine roots; common fine and medium tubular pores; violently effervescent; strongly alkaline (pH 8.8).

#### Typical Pedon Location

*Soil name and map unit in which located:* Wendane silt loam, 0 to 2 percent slopes, in Wendane-Umberland association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 16 miles east of Austin; about 50 feet north and 50 feet east of the southwest corner of sec. 18, T. 16 N., R. 50 E.

#### Range in Characteristics

*Soil moisture content:* Saturated to a depth of 28 to 40 inches in spring in most years; dry in mid-summer to mid-winter; moist in mid-winter, in spring, and early in summer

*Depth to apparent seasonal high water table:* 30 to 48 inches in February to July, except in areas that have been drained

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to the Cqk horizon:* 11 to 20 inches

*Depth to high-chroma mottles:* 13 to 27 inches

*Content of salt:* Commonly strongly affected by salt in the upper part, nonsaline or slightly affected by salt in the lower part

*Exchangeable sodium percentage:* 15 to 70 in at least half of the upper 20 inches, decreasing in alkalinity with increasing depth

*Reaction:* Moderately alkaline to very strongly alkaline

*Other characteristics:* Mineralogy is mixed, but is strongly influenced by volcanic ash and other pyroclastic material; unconformable stratified gravelly sand or very gravelly sand common below a depth of 40 inches in some pedons

*Control section:*

Content of clay—20 to 30 percent when mixed

Texture—averages silt loam or silty clay loam that is less than 15 percent fine sand or coarser particles

*A horizon:*

Value—6 or 7 dry, 4 to 6 moist

Chroma—1 to 4

Structure—thin to thick and platy, fine and granular, or massive

Consistence—very friable to firm (moist), slightly sticky to very sticky and slightly plastic to very plastic (wet)

*C and Cqk horizons:*

Hue—10YR or 2.5Y

Value—6 to 8 dry, 4 to 7 moist

Chroma—1 to 4

Texture—stratified very fine sandy loam, silt loam, silty clay loam, and clay loam

Other characteristics—strata of volcanic ash 4 to 10 inches thick common between depths of 13 and 36 inches

*Cqk horizon:*

Thickness—13 to more than 30 inches

Other characteristics—20 to 35 percent weakly or strongly cemented durinodes in a friable matrix; as much as 30 percent discontinuous weak silica cementation in individual strata

#### Whirlo Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Mixed alluvium that includes some loess

*Positions on landscape:* Fan aprons, inset fans, fan skirts

*Slope:* 0 to 8 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 48 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, mesic Typic Camborthids

#### Typical Pedon

A1—0 to 4 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate very thick platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine random roots; many very fine and few fine vesicular pores; 5 percent pebbles; very slightly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.

A2—4 to 7 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate very thin and thin platy structure; slightly hard, very friable, slightly sticky and plastic; common very fine random roots and very few fine oblique roots; common very fine vesicular and tubular pores; 5 percent pebbles; moderately alkaline (pH 8.2); abrupt wavy boundary.

Bw—7 to 12 inches; pale brown (10YR 6/3) silt loam,



brown (10YR 4/3) moist; massive; slightly hard, very friable, slightly sticky and plastic; many very fine random roots and very few fine oblique roots; common very fine and few fine tubular pores; 5 percent pebbles; moderately alkaline (pH 8.2); clear smooth boundary.

**2Bk1**—12 to 24 inches; very pale brown (10YR 7/3) very gravelly fine sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine random roots and very few fine oblique roots; common very fine tubular pores; 35 percent pebbles; 10 percent weak durinodes 10 to 30 millimeters in diameter; few fine lime filaments and thin lime coatings on pebbles; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

**2Bk2**—24 to 60 inches; variegated extremely gravelly coarse sandy loam; single grain; loose, nonsticky and slightly plastic; common very fine random roots; 5 percent cobbles and 70 percent pebbles; lime coatings on 50 percent of pebbles; strongly effervescent; moderately alkaline (pH 8.4).

#### Typical Pedon Location

*Map unit in which located:* Whirlo silt loam, 0 to 2 percent slopes

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 11 miles southeast of Battle Mountain; about 1,900 feet west and 1,450 feet north of the southeast corner of sec. 29, T. 31 N., R. 46 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in mid-May through November

*Average annual soil temperature:* 47 to 53 degrees F

*Depth to the 2Bk horizon:* 10 to 20 inches

#### Control section:

Content of clay—5 to 15 percent

Content of rock fragments—35 to 70 percent, mainly pebbles

#### A horizon:

Value—6 or 7 dry, 3 or 4 moist

Chroma—2 or 3

Structure—weak or moderate, thin to thick, and platy, or massive

Reaction—neutral to moderately alkaline

#### Bw horizon:

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3

Texture—gravelly sandy loam, fine sandy loam, very fine sandy loam, silt loam, or gravelly loam

Content of rock fragments—0 to 30 percent pebbles

Structure—weak or moderate, fine or medium, and subangular blocky; weak, coarse, and prismatic; or massive

Reaction—neutral to moderately alkaline

#### 2Bk horizon:

Hue—10YR or 2.5Y

Value—6 to 8 dry, 3 to 6 moist

Chroma—2 or 3

Texture—stratified very gravelly loam to extremely gravelly coarse sandy loam

Content of rock fragments—35 to 75 percent, mainly pebbles and some cobbles and stones

Reaction—moderately alkaline or strongly alkaline

Effervescence—slightly effervescent to violently effervescent

Other characteristics—as much as 10 percent weak durinodes common in the lower part in some pedons

### Wholan Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Mantle of loess over silty alluvium derived from various kinds of rock

*Positions on landscape:* Inset fans, fan skirts

*Slope:* 0 to 2 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 49 degrees F

*Taxonomic class:* Coarse-silty, mixed, mesic Typic Camborthids

#### Typical Pedon

**A**—0 to 5 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; many very fine vesicular pores; mildly alkaline (pH 7.8); abrupt smooth boundary.

**Bw**—5 to 13 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine tubular pores; mildly alkaline (pH 7.8); clear smooth boundary.

**Bk**—13 to 21 inches; white (10YR 8/2) very fine sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine tubular pores; few fine lime filaments or threads; strongly effervescent; strongly alkaline (pH 8.6); abrupt wavy boundary.

**C**—21 to 25 inches; white (10YR 8/1) very fine sandy loam, light brownish gray (10YR 6/2) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine tubular pores; slightly effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary.

**Cq**—25 to 60 inches; light gray (10YR 7/2) very fine sandy loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine tubular pores; 5 percent weakly cemented durinodes; strongly effervescent; very strongly alkaline (pH 9.2).

#### Typical Pedon Location

*Soil name and map unit in which located:* Wholan silt loam, 0 to 2 percent slopes, in McConnel-Rasille-Wholan association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 21 miles west of Austin; about 1,200 feet south and 400 feet west of the northeast corner of sec. 1, T. 18 N., R. 39 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry late in May through October

*Average annual soil temperature:* 47 to 53 degrees F

*Depth to the Bk horizon:* 11 to 24 inches

*Reaction:* Mildly alkaline to very strongly alkaline, increasing in alkalinity with increasing depth

*Content of salt and sodium:* Nonsaline and nonsodic or slightly affected by salt and sodium to a depth of 30 inches, moderately or strongly affected below this depth

*Other characteristics:* Thin strata that have as much as 5 percent very hard, firm, brittle durinodes 0.5 to 0.75 inch in diameter present in the C horizon in some pedons

#### Control section:

Content of clay—5 to 15 percent

Texture—dominantly silt loam or very fine sandy loam, but thin strata of loam or fine sandy loam in some pedons

#### A horizon:

Value—5 to 7 dry, 3 to 5 moist (5 dry and 3 moist in the A1 horizon only)

Chroma—2 to 4

Structure—weak or moderate, very thin to medium and platy or coarse and subangular blocky; or massive

Consistence—soft or slightly hard

Effervescence—noneffervescent or slightly effervescent

#### Bw horizon:

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 to 4

Structure—weak, fine to coarse and subangular blocky or medium or coarse and prismatic; or massive

#### Bk and C horizons:

Value—6 to 8 dry, 4 to 6 moist

Chroma—2 to 4

Content of durinodes—as much as 5 percent in some strata in some pedons

Other characteristics—few to many, fine or medium veins and soft masses of lime in the Bk horizon, no segregated lime in the C horizon

### Wieland Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Mixed alluvium that is derived from volcanic and sedimentary rock and includes some loess and volcanic ash

*Positions on landscape:* Summits and side slopes of fan piedmont remnants

*Slope:* 2 to 15 percent

*Mean annual precipitation:* About 9 inches

*Mean annual temperature:* About 48 degrees F

**Taxonomic class:** Fine, montmorillonitic, mesic Durixerollic Haplargids

#### Typical Pedon

About 20 percent of the surface is covered with pebbles.

**A1**—0 to 5 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 3/3) moist; weak thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine vesicular pores; 15 percent pebbles; mildly alkaline (pH 7.6); clear smooth boundary.

**A2**—5 to 8 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine interstitial pores; 5 percent pebbles; mildly alkaline (pH 7.6); clear smooth boundary.

**Bt1**—8 to 14 inches; brown (10YR 5/3) gravelly clay loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium angular blocky; hard, friable, very sticky and very plastic; few very fine and fine roots; few

very fine tubular pores; few thin clay films on faces of peds; 15 percent pebbles; mildly alkaline (pH 7.6); gradual wavy boundary.

**Bt2**—14 to 20 inches; yellowish brown (10YR 5/4) gravelly clay, dark yellowish brown (10YR 3/4) moist; moderate medium prismatic structure parting to strong medium angular blocky; hard, firm, very sticky and very plastic; few very fine and fine roots; few very fine tubular pores; many moderately thick and few thick clay films on faces of peds; common silica and lime pendants on the underside of rock fragments; 30 percent pebbles; few fine irregular seams of lime; slightly effervescent; moderately alkaline (pH 8.0); gradual smooth boundary.

**Bqk1**—20 to 25 inches; very pale brown (10YR 7/4) very gravelly sandy clay loam, yellowish brown (10YR 5/4) moist; massive; very hard, firm, slightly sticky and slightly plastic; few fine roots; few very fine and fine tubular pores; 40 percent discontinuous weak silica cementation; many silica and lime pendants on the underside of rock fragments; 50 percent pebbles and 5 percent cobbles; common fine irregular seams of lime; violently effervescent; moderately alkaline (pH 8.4); gradual smooth boundary.

**Bqk2**—25 to 44 inches; very pale brown (10YR 8/4), continuous, weakly silica-cemented gravelly loam, light yellowish brown (10YR 6/4) moist; massive; very hard, very firm, slightly sticky and slightly plastic; few fine roots; few very fine tubular pores; 20 percent strong durinodes 5 to 25 millimeters in diameter, mostly in few thin strata of noncemented material; 25 percent pebbles; violently effervescent; moderately alkaline (pH 8.4); gradual smooth boundary.

**Cqk**—44 to 60 inches; light gray (10YR 7/2), continuous, weakly silica-cemented gravelly loam, brown (10YR 5/3) moist; massive; hard, firm, slightly sticky and slightly plastic; few fine tubular pores; 15 percent pebbles; violently effervescent; moderately alkaline (pH 8.4).

#### Typical Pedon Location

*Soil name and map unit in which located:* Wieland gravelly loam, 4 to 15 percent slopes, in Allor-Wieland association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 8 miles northwest of Austin; about 800 feet east and 750 feet north of the southwest corner of sec. 21, T. 20 N., R. 45 E.

#### Range in Characteristics

*Soil moisture content:* Usually dry, but moist late in October to early in June

*Average annual soil temperature:* 47 to 52 degrees F  
*Depth to continuous weak silica cementation:* 19 to 30 inches

*Depth to the base of the Bt horizon:* 19 to 30 inches

*Other characteristics:* 2C horizon that is variegated very gravelly loam present at a depth of 40 inches or more in some pedons; 2Cq horizon that is 50 to 65 percent pebbles present in some pedons

*Control section (when mixed):*

Content of clay—40 to 55 percent

Content of rock fragments—15 to 35 percent pebbles

*A horizon:*

Value—5 or 6 dry

Chroma—2 or 3

Structure—weak or moderate, very thin to very thick, and platy; or weak or moderate, fine to coarse, and subangular blocky

Reaction—mildly alkaline or moderately alkaline

*Bt1 horizon (when present):*

Value—5 or 6 dry

Chroma—2 or 3

Structure—weak or moderate, very fine, fine, or medium, and subangular blocky or prismatic

Consistence—very friable or friable (moist), sticky or very sticky and plastic or very plastic (wet)

Reaction—mildly alkaline or moderately alkaline

*Bt2 horizon:*

Value—5 to 7 dry, 3 to 5 moist

Chroma—2 to 4 dry, 3 or 4 moist

Content of clay—dominantly 40 to 55 percent when mixed, but as much as 60 percent clay in some pedons

Content of rock fragments—15 to 35 percent pebbles when mixed

Structure—weak or moderate, fine to coarse, and prismatic, or weak or moderate, very fine, fine, or medium, and angular blocky

Reaction—moderately alkaline or strongly alkaline

Other characteristics—slightly effervescent or strongly effervescent and lime filaments common in the lower part in some pedons

*Bqk and Cqk horizons:*

Hue—10YR or 2.5Y

Value—6 to 8 dry, 4 to 6 moist

Chroma—1 to 4

Effervescence—noneffervescent to violently effervescent

Other characteristics—thin, discontinuous, weakly cemented Bqk horizon above the continuously cemented layer in some pedons; relict mottles

present at a depth of more than 30 inches in many pedons

### **Xine Series**

*Depth class:* Moderately deep

*Drainage class:* Well drained

*Parent material:* Residuum derived from limestone and calcareous shale

*Positions on landscape:* Side slopes of mountains

*Slope:* 30 to 75 percent

*Mean annual precipitation:* About 12 inches

*Mean annual temperature:* About 44 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, frigid Aridic Calcixerolls

#### **Typical Pedon**

About 15 percent of the surface is covered with pebbles.

A1—0 to 5 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, slightly sticky and nonplastic; common very fine and fine roots; many very fine and fine interstitial pores; 15 percent pebbles; slightly effervescent; mildly alkaline (pH 7.6); clear smooth boundary.

A2—5 to 10 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; 25 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

Bk1—10 to 18 inches; pale brown (10YR 6/3) very cobbly loam, dark brown (10YR 3/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; many fine, medium, and coarse roots; many very fine, fine, and medium tubular pores; 20 percent pebbles, 20 percent cobbles, and 5 percent stones; few fine lime filaments and coatings on rock fragments; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Bk2—18 to 33 inches; pale brown (10YR 6/3) very cobbly loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; common fine and medium roots; common very fine and fine tubular pores; 20 percent pebbles, 15 percent cobbles, and 5 percent stones; common fine lime filaments, soft masses, and coatings on rock fragments; violently effervescent; strongly alkaline (pH 8.6); clear wavy boundary.

Cr—33 inches; weathered, fractured, calcareous shale.

#### **Typical Pedon Location**

*Soil name and map unit in which located:* Xine gravelly loam, 30 to 50 percent slopes, in Attella-Xine-Kram association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 60 miles southwest of Battle Mountain; in an unsectionalized area about 1,600 feet north and 1.1 mile east of the southeast corner of the assumed sec. 24, T. 25 N., R. 39 E.

#### **Range in Characteristics**

*Soil moisture content:* Moist late in fall to early in summer, dry in July through October

*Average annual soil temperature:* 44 to 46 degrees F

*Thickness of the mollic epipedon:* 7 to 14 inches

*Depth to paralithic contact:* 20 to 40 inches

*Depth to the calcic horizon:* 10 to 25 inches

*Other characteristics:* Content of secondary lime increases with increasing depth

#### *Control section:*

Texture—very cobbly loam or very cobbly sandy loam

Content of clay—10 to 18 percent

Content of rock fragments—35 to 60 percent, mainly cobbles

Calcium carbonate equivalent—25 to 40 percent

#### *A horizon:*

Value—dominantly 4 or 5 dry and 2 or 3 moist, but in some pedons a thin A1 horizon has value of 6 dry

Chroma—2 or 3

Reaction—mildly alkaline or moderately alkaline

#### *Bk horizon:*

Value—5 to 7 dry, 3 to 5 moist

Chroma—3 or 4

Reaction—moderately alkaline or strongly alkaline

### **Yobe Series**

*Depth class:* Very deep

*Drainage class:* Somewhat poorly drained

*Parent material:* Silty lacustrine sediment derived from various kinds of rock

*Positions on landscape:* Alluvial flats

*Slope:* 0 to 2 percent

*Mean annual precipitation:* About 6 inches

*Mean annual temperature:* About 51 degrees F

**Taxonomic class:** Fine-silty, mixed (calcareous), mesic Aeric Halaquepts

#### **Typical Pedon**

A—0 to 2 inches; pale brown (10YR 6/3) silt loam, dark grayish brown (10YR 4/2) moist; weak medium platy

structure; soft, very friable, slightly sticky and slightly plastic; few very fine and coarse roots; common very fine tubular pores; strongly effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary.

- C1—2 to 9 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; few very fine tubular pores; strongly effervescent; strongly alkaline (pH 8.6); clear wavy boundary.
- C2—9 to 16 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; weak fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; few very fine tubular pores; common firm lime nodules less than 1 millimeter in diameter; violently effervescent; strongly alkaline (pH 8.6); gradual wavy boundary.
- C3—16 to 24 inches; very pale brown (10YR 7/3) silt loam, pale brown (10YR 6/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium and coarse roots; few very fine tubular pores; common firm lime nodules less than 1 millimeter in diameter; violently effervescent; strongly alkaline (pH 8.6); gradual wavy boundary.
- C4—24 to 36 inches; very pale brown (10YR 7/3) silt loam, pale brown (10YR 6/3) moist; few fine distinct brownish yellow (10YR 6/6) mottles; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine tubular pores; common firm lime nodules less than 1 millimeter in diameter; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary.
- C5—36 to 60 inches; white (2.5Y 8/2) silty clay loam, light brownish gray (2.5Y 6/2) moist; common medium distinct and prominent brown (7.5YR 4/4), reddish yellow (7.5YR 6/6), and brownish yellow (10YR 6/6) mottles; massive; hard, friable, sticky and plastic; common very fine and fine roots; common fine tubular pores; thin shiny pressure plates on faces of peds; common firm lime nodules 5 to 10 millimeters in diameter; violently effervescent; moderately alkaline (pH 8.4).

#### Typical Pedon Location

*Soil name and map unit in which located:* Yobe silt loam, 0 to 2 percent slopes, in Yobe-Kawich-Playas association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 27 miles southeast of

Austin; about 1,200 feet north and 500 feet east of the southwest corner of sec. 8, T. 15 N., R. 45 E.

#### Range in Characteristics

*Depth to the seasonal high water table:* 36 to 48 inches for 1 month or more in most years

*Soil moisture content:* Moist to within at least 30 inches of the surface because of the capillary fringe

*Average annual soil temperature:* 47 to 52 degrees F

*Texture of the control section:* Stratified very fine sandy loam to silty clay loam that is less than 15 percent sand that is coarser textured than very fine sand and 18 to 25 percent clay when mixed

*Exchangeable sodium percentage:* More than 13 (decreases with increasing depth below 20 inches)

*Hue:* 10YR, 2.5Y, or 5Y

*Value:* 6 to 8 dry, 4 to 6 moist

*Chroma:* 2 or 3

*Effervescence:* Strongly effervescent or violently effervescent

*Reaction:* Strongly alkaline or very strongly alkaline in the A horizon, moderately alkaline or strongly alkaline in the C horizon

*Other characteristics:* Very few to common lime nodules in most of the lower part

#### Zaidy Series

*Depth class:* Moderately deep to duripan

*Drainage class:* Well drained

*Parent material:* Alluvium derived from volcanic rock

*Positions on landscape:* Fan piedmont remnants

*Slope:* 2 to 15 percent

*Mean annual precipitation:* About 9 inches

*Mean annual temperature:* About 47 degrees F

*Taxonomic class:* Fine-loamy, mixed, mesic Haploxerollic Durargids

#### Typical Pedon

About 50 percent of the surface is covered with pebbles and 5 percent with cobbles.

A—0 to 5 inches; light brownish gray (10YR 6/2) very gravelly fine sandy loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine and few very fine roots; common very fine and fine tubular pores; 35 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary.

Bt—5 to 8 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; common very fine and fine subangular blocky structure; slightly hard, friable, slightly sticky and

slightly plastic; common very fine and fine roots; common fine and medium tubular pores; few thin clay films on faces of peds; 5 percent pebbles; moderately alkaline (pH 8.4); clear smooth boundary.

**Btk**—8 to 14 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; strong medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common fine and medium tubular pores; common thin and few moderately thick clay films on faces of peds and lining pores; 20 percent pebbles; few fine soft lime masses; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

**Bqk**—14 to 25 inches; very pale brown (10YR 7/4) loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; few fine tubular pores; 10 percent pebbles; 20 percent weak discontinuous silica cementation; common medium soft lime masses and filaments; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

**Bqkm1**—25 to 32 inches; very pale brown (10YR 7/4), continuous, strongly cemented duripan, yellowish brown (10YR 5/4) moist; strong thick platy structure; extremely hard, extremely firm; few fine and very fine roots along horizontal fracture planes; 5 percent pebbles; 20 percent horizontal seams of weakly cemented material; disseminated soft powdery lime; violently effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

**Bqkm2**—32 to 60 inches; very pale brown (10YR 7/4), strongly cemented duripan that has a discontinuous thin indurated cap; yellowish brown (10YR 5/4) moist; massive; extremely hard, extremely firm; 10 percent pebbles and 5 percent cobbles; disseminated soft powdery lime; violently effervescent; moderately alkaline (pH 8.2).

#### Typical Pedon Location

*Soil name and map unit in which located:* Zaidy very gravelly fine sandy loam, 8 to 15 percent slopes, in Zaidy-Allor association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; in the southern part of the Grass Valley; about 1,050 feet south and 1,000 feet west of the northeast corner of sec. 11, T. 20 N., R. 45 E.

#### Range in Characteristics

*Soil moisture content:* Usually dry, but moist in some part in mid-October through May

*Average annual soil temperature:* 47 to 50 degrees F

*Depth to the base of the Btk horizon:* 12 to 25 inches

*Depth to carbonates:* 8 to 15 inches

*Depth to the duripan:* 20 to 30 inches

*Reaction:* Mildly alkaline or moderately alkaline

*Control section:*

Content of clay—25 to 35 percent when mixed

Content of rock fragments—10 to 35 percent, mainly pebbles

*A horizon:*

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3

*Bt horizon:*

Value—5 or 6 dry, 4 or 5 moist

Chroma—4 to 6

Sodium adsorption ratio—6 to 13

### Zineb Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Loamy alluvium that is derived from various kinds of rock and includes some volcanic ash

*Positions on landscape:* Inset fans, fan aprons, fan skirts

*Slope:* 2 to 8 percent

*Mean annual precipitation:* About 8 inches

*Mean annual temperature:* About 46 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, mesic Durixerollic Camborthids

#### Typical Pedon

About 20 percent of the surface is covered with pebbles.

**A1**—0 to 3 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; weak medium platy structure; soft, very friable, nonsticky and nonplastic; few very fine roots; many very fine vesicular pores; 10 percent pebbles and 5 percent cobbles; moderately alkaline (pH 8.0); abrupt smooth boundary.

**A2**—3 to 5 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; weak medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores; 10 percent pebbles and 5 percent cobbles; moderately alkaline (pH 8.0); abrupt smooth boundary.

**Bw**—5 to 11 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common

fine and medium roots; common very fine tubular pores; 15 percent pebbles and 5 percent cobbles; moderately alkaline (pH 8.0); clear wavy boundary.

**Bq**—11 to 16 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few medium roots; common very fine tubular pores; 30 percent discontinuous weak silica cementation and 5 percent strongly cemented durinodes 5 to 10 millimeters in diameter; 30 percent pebbles and 5 percent cobbles; moderately alkaline (pH 8.2); clear wavy boundary.

**Bqk1**—16 to 20 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; 20 percent discontinuous weak silica cementation; 35 percent pebbles and 5 percent cobbles; common medium lime coatings on the underside of rock fragments; noneffervescent in matrix; moderately alkaline (pH 8.4); clear wavy boundary.

**2Bqk2**—20 to 45 inches; pale brown (10YR 6/3) extremely cobbly loamy coarse sand, dark brown (10YR 4/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; common medium roots; common very fine tubular pores; 70 percent discontinuous weak silica cementation; 40 percent pebbles and 25 percent cobbles; many medium lime coatings on the underside of rock fragments; slightly effervescent in matrix; strongly alkaline (pH 8.6); clear wavy boundary.

**3Btbk**—45 to 60 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; hard, firm, slightly sticky and plastic; common fine and medium roots; common very fine tubular pores; few thin clay films on faces of peds; 10 percent pebbles; common fine lime filaments and seams; slightly effervescent in matrix; strongly alkaline (pH 9.0).

#### Typical Pedon Location

*Map unit in which located:* Zineb gravelly loam, 2 to 8 percent slopes

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 33 miles southeast of Battle Mountain; in an unsectionalized area about 600 feet west and 2,400 feet north of the southeast corner of the assumed sec. 33, T. 27 N., R. 47 E.

#### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry in June through October

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to carbonates and to the 2Bk horizon:* 16 to 26 inches

*Depth to the Bq horizon:* 10 to 18 inches

*Content of rock fragments in the control section:*

Averages 50 to 75 percent, dominantly pebbles in the upper part and cobbles in the lower part

*Other characteristics:* Strata of unconformable loam below a depth of 40 inches in some pedons

*A horizon:*

Value—5 or 6 dry (value of more than 5.5 occurs when the upper 7 inches is mixed)

Chroma—2 or 3

*Bw horizon:*

Value—3 or 4 moist

Chroma—3 or 4

Structure—subangular blocky or massive

Content of rock fragments—15 to 35 percent, dominantly pebbles

Texture—gravelly loam or gravelly very fine sandy loam

*Bq horizon:*

Texture—very gravelly loam or very gravelly sandy loam

Content of rock fragments—35 to 60 percent, dominantly pebbles

Other characteristics—discontinuous weak silica cementation or durinodes in a friable matrix

*2Bk or 2Bqk horizon:*

Texture—extremely cobbly sandy loam in the upper part and extremely cobbly loamy coarse sand or extremely cobbly coarse sand in the lower part

Content of rock fragments—60 to 80 percent, dominantly cobbles

#### Zoesta Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Alluvium and colluvium derived from various kinds of rock

*Positions on landscape:* Summits and side slopes of mountain valley fan remnants, partial ballenas, side slopes of mountains

*Slope:* 8 to 30 percent

*Mean annual precipitation:* About 11 inches

*Mean annual temperature:* About 44 degrees F

*Taxonomic class:* Fine, montmorillonitic, frigid Xerollic Paleargids

#### Typical Pedon

About 20 percent of the surface is covered with pebbles and 15 percent with cobbles.

A1—0 to 2 inches; brown (10YR 5/3) cobbly loam, dark brown (10YR 3/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine, fine, and medium roots; many very fine and fine vesicular pores; 15 percent pebbles and 15 percent cobbles; neutral (pH 7.2); abrupt smooth boundary.

A2—2 to 7 inches; brown (10YR 5/3) cobbly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common very fine and fine tubular pores; 10 percent pebbles, 15 percent cobbles, and 5 percent stones; mildly alkaline (pH 7.4); abrupt smooth boundary.

Bt1—7 to 12 inches; pale brown (10YR 6/3) cobbly clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and medium roots; common very fine and fine tubular pores; few thin clay films coating sand grains; 10 percent pebbles and 15 percent cobbles; mildly alkaline (pH 7.4); abrupt smooth boundary.

Bt2—12 to 18 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; strong fine and medium prismatic structure; very hard, very firm, very sticky and very plastic; few very fine roots; few fine tubular pores; many moderately thick clay films on faces of peds and lining pores; 5 percent pebbles; mildly alkaline (pH 7.8); clear wavy boundary.

Bt3—18 to 23 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; strong fine prismatic structure parting to strong fine angular blocky; very hard, very firm, very sticky and very plastic; few very fine roots; few fine tubular pores; common moderately thick clay films on faces of peds and lining pores; 10 percent pebbles; slightly effervescent; moderately alkaline (pH 8.0); clear wavy boundary.

Btk—23 to 31 inches; light yellowish brown (10YR 6/4) gravelly clay loam, yellowish brown (10YR 5/6) moist; strong fine prismatic structure parting to strong fine subangular blocky; very hard, very firm, sticky and plastic; common moderately thick clay films on faces of peds and lining pores; 30 percent pebbles; common fine soft lime masses; slightly effervescent in matrix; moderately alkaline (pH 8.2); gradual wavy boundary.

Bqk—31 to 60 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; massive; very hard, very firm, sticky and slightly plastic; 40 percent pebbles; 15 percent strongly cemented durinodes; many coarse soft lime

masses; violently effervescent; moderately alkaline (pH 8.4).

### Typical Pedon Location

*Soil name and map unit in which located:* Zoesta cobbly loam, 15 to 30 percent slopes, in Zoesta-Robson-Softscrabble association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 16 miles north of Austin; about 1,900 feet south and 800 feet west of the northeast corner of sec. 1, T. 22 N., R. 44 E.

### Range in Characteristics

*Soil moisture content:* Usually dry, but moist in winter and spring

*Average annual soil temperature:* 44 to 46 degrees F

*Combined thickness of the A and Bt horizons:* 30 to 40 inches

*Depth to carbonates:* 10 to 20 inches

*Other characteristics:* Effervescence increases with increasing depth, secondary lime occurs in the lower part of the solum

#### Control section:

Texture—clay loam or clay

Content of clay—35 to 50 percent

Content of rock fragments—less than 15 percent in the upper part and 15 to 35 percent in the lower part, mainly pebbles

#### A horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3

Reaction—neutral or mildly alkaline

#### Bt horizon:

Value—5 or 6 dry, 3 to 5 moist

Chroma—3 to 6

Structure—strong, fine to coarse, and prismatic

Reaction—mildly alkaline or moderately alkaline

#### Bqk horizon:

Value—5 or 6 dry, 4 or 5 moist

Chroma—4 to 6

Texture—clay loam or loam

Content of clay—20 to 35 percent

Content of rock fragments—35 to 60 percent, mainly pebbles

Reaction—moderately alkaline or strongly alkaline

Other characteristics—durinodes absent in some pedons

### Zoesta Variant

*Depth class:* Very deep

*Drainage class:* Well drained



*Parent material:* Residuum and colluvium derived from chert, quartzite, and extrusive volcanic rock

*Positions on landscape:* Side slopes of foothills

*Slope:* 15 to 30 percent

*Mean annual precipitation:* About 9 inches

*Mean annual temperature:* About 47 degrees F

**Taxonomic class:** Fine, montmorillonitic, mesic Xerollic Paleargids

### Typical Pedon

About 45 percent of the surface is covered with pebbles and 5 percent with cobbles.

- A1—0 to 3 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; weak medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine vesicular pores; 25 percent pebbles; neutral (pH 7.0); abrupt smooth boundary.
- A2—3 to 8 inches; light yellowish brown (10YR 6/4) gravelly loam, dark yellowish brown (10YR 3/4) moist; weak medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; 15 percent pebbles; mildly alkaline (pH 7.4); abrupt smooth boundary.
- Bt1—8 to 13 inches; light brown (7.5YR 6/4) gravelly clay loam, dark brown (7.5YR 3/4) moist; strong fine subangular blocky structure; hard, firm, sticky and very plastic; common very fine and fine roots; common very fine tubular pores; common thin clay films on faces of peds; 20 percent pebbles; mildly alkaline (pH 7.4); abrupt smooth boundary.
- 2Bt2—13 to 20 inches; light brown (7.5YR 6/4) clay, dark brown (7.5YR 4/4) moist; strong medium prismatic structure parting to strong coarse angular blocky; very hard, very firm, very sticky and very plastic; continuous moderately thick clay films on faces of peds; 5 percent pebbles; mildly alkaline (pH 7.8); clear wavy boundary.
- 2Bt3—20 to 27 inches; light brown (7.5YR 6/4) clay, dark brown (7.5YR 4/4) moist; moderate medium prismatic structure parting to moderate coarse subangular blocky; very hard, very firm, very sticky and very plastic; few fine roots; few very fine tubular pores; many moderately thick clay films on faces of peds; moderately alkaline (pH 8.0); clear wavy boundary.
- 2Bt4—27 to 36 inches; light yellowish brown (10YR 6/4) clay loam, dark yellowish brown (10YR 4/4) moist; common fine black (10YR 2/1) manganese stains; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few very fine roots;

few fine tubular pores; common thin clay films on faces of peds; 10 percent pebbles; moderately alkaline (pH 8.0); gradual wavy boundary.

3Bqk—36 to 60 inches; very pale brown (10YR 7/3) gravelly loam, brown (10YR 5/3) moist; common coarse black (10YR 2/1) manganese stains; massive; very hard, firm, slightly sticky and slightly plastic; few very fine tubular pores; 40 percent discontinuous weak silica cementation; 25 percent pebbles; noneffervescent in matrix, common fine strongly effervescent lime seams; moderately alkaline (pH 8.0).

### Typical Pedon Location

*Soil name and map unit in which located:* Zoesta Variant gravelly loam, 15 to 30 percent slopes, in Zoesta Variant-Jung-McVegas association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 37 miles south of Battle Mountain; about 2,300 feet south and 100 feet east of the northwest corner of sec. 2, T. 25 N., R. 45 E.

### Range in Characteristics

*Soil moisture content:* Moist in winter and spring, dry late in June through October

*Average annual soil temperature:* 47 to 52 degrees F

*Combined thickness of the A and Bt horizons:* 35 to 45 inches

*Depth to the Bqk horizon:* 35 to 45 inches

*Control section (when mixed):*

Content of clay—45 to 60 percent

Content of rock fragments—5 to 10 percent

*A horizon:*

Hue—7.5YR or 10YR

Value—5 or 6 dry, 3 to 5 moist

Chroma—3 to 6

*Bt horizon:*

Hue—7.5YR or 10YR

Value—5 or 6 dry, 3 to 6 moist

Chroma—3 to 6

Content of clay—55 to 65 percent in the upper part, 35 to 50 percent in the lower part

*Bqk horizon:*

Value—6 to 8 dry, 5 or 6 moist

Chroma—3 to 6

Texture—loam or sandy loam

Content of rock fragments—15 to 35 percent, mainly pebbles

Other characteristics—20 to 50 percent discontinuous weak silica cementation, thin strata of weak continuous cementation in some pedons

# Formation of the Soils

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Soil is a natural body on the earth's surface in which plants grow. It is a mixture of rocks, minerals, organic matter, water, and air in varying proportions. The rocks and minerals are fragmented and are partly or wholly weathered. Soils have distinctive layers, or horizons, that are parallel to the soil surface. Soil horizons are the product of environmental forces acting upon material deposited or accumulated through geologic activity.

Soils differ from one another in different localities and within short distances. The differences are the result of the interaction of five soil-forming factors that are known to affect soil formation. These factors are (1) biological forces, mainly the plant cover and the organisms living in and on the soil; (2) climate, mainly the temperature and kind and amount of precipitation that have existed since accumulation of the parent material; (3) relief, mainly as it affects the internal and external soil properties, such as drainage, aeration, susceptibility to erosion, and exposure to sun and wind; (4) parent material, including texture and structure of the material as well as its mineralogic and chemical composition; and (5) the length of time that the soil-forming factors have been operating. These factors form the ecosystem of soil genesis (13).

The soil-forming factors interrelate to develop soil horizons that have specific properties. The age and strength of expression of the horizons is determined by the amount of weathering of the parent material. Weathering is the result of the interaction of moisture, temperature, and biological activity as influenced by time. The kinds and combinations of horizons and other diagnostic properties and their strength of expression provide clues as to the age of the soils in the area (26, 27). Diagnostic horizons present in the soils include mollic epipedons; cambic, argillic, and natric horizons; and silica-cemented horizons.

Mollic epipedons are thick, dark surface horizons that have high base saturation. They form in areas where organic matter accumulates faster than it is oxidized. The organic matter is added to the soil in the form of decomposed roots and organic residue from the surface. When conditions are favorable, mollic epipedons can form in 100 to 1,000 years. They are the

only diagnostic horizons in younger soils, but they occur in combination with other diagnostic horizons in older soils.

Cambic horizons in this survey area are identified by a redistribution of soluble salts and carbonates to a lower position in the soil profile, oxidation of the B horizon, and alteration of the original parent material to platy or blocky structure. Cambic horizons in northern and central Nevada generally are thought to be about 5,000 to 10,000 years old. This age has been determined mostly from soil mapping in areas near Lake Lahontan and other Pleistocene lakes (12, 14, 16, 17). Cambic horizons also are present in soils that have a thin layer of Mount Mazama ash in the profile.

Argillic horizons are subsurface horizons that consist of illuvial clay accumulations. Prominent argillic horizons in this area commonly are in soils that formed on surfaces of Wisconsin and pre-Wisconsin age (5, 9, 10, 12, 15, 19, 27). Generally, as argillic horizons age they become finer in texture and somewhat thicker and tend to develop an abrupt upper boundary.

Natric horizons are argillic horizons that have specific physical and chemical properties as a result of a high content of exchangeable sodium. Prominent natric horizons may have developed from argillic horizons that were influenced by the content of sodium in eolian deposits. Transportation and deposition of sodium in eolian deposits have greatly affected the soils in the survey area.

Volcanic glass in deposits derived from pyroclastic material and in eolian deposits is a source of silica that results in the formation of durinodes and duripans in many of the soils in the survey area. Duripans are massive horizons that are cemented with silica and in some areas with accessory calcium carbonate. Soils of the Holocene that developed in deposits that have a high content of volcanic ash commonly have weakly to moderately cemented horizons that contain a large amount of amorphous siliceous material. This silica cementation can form in a relatively short period of time and is probably less than 7,000 years old. Platy, or laminated, duripans and thin, discontinuous, laminar duripans tend to develop in loamy material. Duripans

capped with silica-cemented laminar layers probably are the oldest ones in the area and are of early Wisconsin to pre-Wisconsin age, as evidenced by their association with prominent argillic horizons.

The overall landscape of the area, which is mainly mountains and valleys, is the result of geologic stratigraphic and structural control. The present topography and landforms, however, primarily are the result of events that occurred during the Quaternary. The kinds of soils that formed are indicative of the stability and age of the surfaces of the landforms on which they occur. The degree of development of diagnostic horizons in the soils indicates a range in age from Holocene to pre-Wisconsin. The many kinds of soils in the area are a direct result of this range in age.

## Biological Forces

Plants, animals, insects, and microflora are important biological forces that affect soil formation in this survey area. Although mammals, such as badgers and ground squirrels, and insects, such as cicadas and ants, have had some effect on soil development, plants appear to have had a major influence.

The vegetation in the area has been particularly important in stabilizing the land surfaces so that soil formation can occur. Plants provide stability by protecting the surface from erosion, and their roots help to develop soil structure and aggregate stability.

Because of climatic differences, the plant community varies considerably as elevation increases. On the flood plains, where drainage is restricted, the dense meadow vegetation has supplied the organic matter necessary for the development of Fluvaquentic Haplaquolls (Paranat series), which have a dark A horizon.

On fan piedmonts, fan skirts, alluvial flats, and lake plains at the lower elevations, the dominant plants are drought- and salt-tolerant shrubs (22). Because of the scarcity of available moisture, the plant cover in these areas is sparse. As a result, little organic matter is added to the soils and little protection from the wind and sun is provided. Salts have been moved from the lower layers to the upper layer by the salt-tolerant shrubs. Examples of soils that formed in these areas are Duric Natrargids (Beoska series) on fan piedmonts and Aeris Halaquepts (Ocala series) on alluvial flats.

Fan piedmonts, fan skirts, and foothills at the higher elevations support a plant cover of shrubs and grasses. The density of these plants is somewhat greater; therefore, moderate amounts of organic matter have accumulated in the A horizon. Soluble salts are present at a greater depth in the profile. Examples of soils that formed in these areas are Durixerollic Haplargids (Pineval series) on fan piedmonts and Xerollic

Haplargids (Trunk series) on foothills.

The mountainous areas support denser stands that include shrubs, grasses, and some trees. Because the vegetation is abundant, the A horizon in these soils is thick, dark, and high in organic matter content. An example of soils in these areas is Aridis Argixerolls (Reluctan series).

## Climate

The major climatic forces that influence soil formation are precipitation and temperature. Recent soils developed under the present climate, but soils that developed before the Holocene were subject to different climatic conditions. Morrison and Frye (16, 17, 18, 19) suggest that accelerated soil formation occurs during unique climatic periods, but the climatic conditions between these periods is not conducive to soil formation.

The present desert climate began at the start of the Pleistocene (4), but both precipitation and temperature have fluctuated greatly. The present climate is characterized by warm, dry summers and cool, moist winters. Precipitation is strongly influenced by the north-south trending mountain ranges, and it generally increases as elevation increases. The average annual precipitation ranges from about 6 inches at the lowest elevations in the Antelope, Big Smoky, and Crescent Valleys to about 16 inches or more at the highest elevations in the Toiyabe Range. Most of the precipitation falls in winter and spring.

The average annual air temperature ranges from about 50 degrees F at the lower elevations in the eastern valleys to about 41 degrees or less in some of the higher mountain ranges. In winter freezing and thawing generally occur throughout the survey area, except in those areas that are insulated by snow cover. This frost action causes heaving of plants, development of miniature rings and rock stripes, and erosion as a result of solifluction. At some of the higher elevations, bedrock has been fractured and displaced as a result of freezing and thawing.

Major climatic variations are a result of the effects of topography and relief. Temperature decreases and precipitation increases as elevation increases. The soils in the survey area generally are divided into climatic zones according to elevation and longitudinal location. As the precipitation increases, the removal of soluble salts and the production of native vegetation increase, which results in a cycling of bases and an increase in organic matter. Fluctuations in temperature and moisture affect the rates of organic matter accumulation and decomposition and the rate of weathering of minerals (6, 13).

At elevations of 5,000 to 5,300 feet, the average annual precipitation is about 6 to 8 inches and the average annual air temperature is about 48 to 50 degrees. In these warm, arid areas, no surplus soil moisture is available to percolate. Chemical weathering of parent material is slow, soluble salts remain in the upper part of the soil profile, and eluviation and illuviation occur very slowly. The plant cover is sparse and consists mainly of drought- and salt-tolerant shrubs. Typically, the soils are low in organic matter content and have a thin, light-colored A horizon. Soluble salts, calcium carbonate, and silica accumulate in the soil profile at a relatively shallow depth. Duric Camborthids (Broyles series) and Duric Natrargids (Beoska series) are examples of soils that formed in this climatic zone.

At elevations of 5,300 to 6,500 feet, the average annual precipitation is about 10 inches and the average annual air temperature is about 47 degrees. In these warm, semiarid areas, the plant cover is thicker than at the lower elevations and consists mainly of drought-tolerant shrubs and grasses. Chemical weathering of parent material occurs slowly. Typically, weathering products are moved down below the root zone, and calcium carbonate and silica accumulate in the lower part of the profile. Soluble salts are completely removed or are concentrated deep in the profile. Typically, the soils are moderately low in organic matter content. They have a thin, relatively dark A horizon or a thicker, light-colored A horizon and a thicker cambic or argillic horizon over accumulations of silica or carbonates. Durixerollic Camborthids (Orovada series) in valleys and Lithic Xerollic Haplargids (Punchbowl series) on foothills are examples of soils that formed in this climatic zone.

At elevations of 6,500 to 8,000 feet, the average annual precipitation is about 12 to 14 inches and the average annual air temperature is about 43 to 46 degrees. In these cool, semiarid areas, the increased precipitation and decreased evapotranspiration rate result in a dense plant cover consisting mainly of shrubs and perennial grasses and localized stands of singleleaf pinyon and Utah juniper. Because of the lower temperatures, organic matter decomposes at a slower rate and accumulates in the A horizon. Chemical weathering is moderate in this climatic zone, soluble salts and calcium carbonate are completely removed from the soil profile, and eluviation and illuviation commonly occur at a moderate rate. Typically, the soils have a thick, dark mollic epipedon and a weak B horizon. Aridic Haploxerolls (Loncan series) and Aridic Argixerolls (Sumine series) are examples of soils that formed in this climatic zone.

At elevations of as much as 10,200 feet, the average annual precipitation is about 14 to more than 16 inches

and the average annual air temperature is about 41 to 43 degrees. These cold areas are mainly on windswept crests and side slopes of mountains, in sheltered areas where snow accumulates, and on back slopes of mountains, where drifted snow accumulates. All soluble salts and calcium carbonate and some exchangeable cations have been removed from the soil profile, resulting in a base saturation that generally is lower than in other climatic zones. Organic matter decomposes slowly, and a thick, dark A horizon forms. Areas where drifted snow accumulates support thick mountain shrubs and grasses. Windswept areas receive less effective precipitation, which is reflected in lower plant production. Soils on stable, north-facing, concave back slopes in areas where snow accumulates may be older than their degree of development indicates because they remain cold for most of the year, which inhibits development. During glacial periods these soils may have remained frozen or under snow cover throughout the year. Pachic Cryoborolls (Hapgood series) on back slopes of mountains and Argic Cryoborolls (Packer series) on windswept crests of mountains are examples of soils that formed in this climatic zone.

## Time

Time is required for the weathering of rocks and minerals and the formation of soil horizons. The interaction of time and other soil-forming factors is not well understood by soil scientists and geologists working in this field. Some suggest that the weathering of parent material and the development of soil profiles essentially have been continuous and at a constant rate throughout the Quaternary (20, 21, 24, 29). Recently, however, geologists concerned with differentiating Quaternary deposits have suggested that soil development has not proceeded continuously at the same rate but has taken place intermittently at rapid rates (16, 17, 18, 23).

The present desert climate began at the start of the Pleistocene (4), but precipitation and temperature have fluctuated greatly. During cooler and wetter glacial periods, or pluvials, the rate of runoff increased, resulting in increased erosion, mass wasting, and deposition. These conditions reduced the rate of evaporation in the basins, and permanent lakes developed on the bolson floors. A change to a cool, drier climate at the beginning of the interglacial periods commonly was marked by maximum eolian activity. Following this was a warm, dry period and then a warm, wet period, which was most conducive to soil development (3, 5, 17). These periods of peak soil development occurred worldwide; therefore, the profiles

of soils that formed in different regions during these periods can be correlated and are similar in age.

The peak soil-forming periods generally followed periods of increased erosion and deposition. During these periods, the land surfaces stabilized and the climate was favorable for a greatly accelerated rate of chemical weathering. Geologists have developed a technique of mapping soils called soil stratigraphy that uses weathering profiles to differentiate and correlate Quaternary deposits. Researchers have found soils in other parts of Nevada that are similar in age to those that formed on stratigraphic surfaces identified by Morrison (5, 12, 15). Comparing soils in this survey area with similar soils in other areas has helped to identify local soils that are similar in age. Although soils developed during each peak soil-forming period, representative profiles have eroded away or have been covered by subsequent depositions in some areas. Because of this, gaps occur in the time-soil profile sequence. In the following paragraphs, some of the time-stratigraphic ages as set forth by Birkeland are discussed (6). These include the Holocene, Wisconsin, and pre-Wisconsin ages.

*Holocene.*—Volcanic ash and eolian material, presumed to be from Mount Mazama ashfalls, are the main sources of soluble silica that forms durinodes and duripans in the soils in the survey area. Thin strata of this material are in some of the soils on fan skirts, alluvial flats, and flood plains (7).

Hawley and Wilson (12) proposed that a distinct Mount Mazama volcanic ash bed (7) along the Humboldt River overlies late Wisconsin deposits and is the boundary between the Pleistocene and Recent soils in the Winnemucca area. This widely spread volcanic ash bed extends into northern Lander County and is interbedded with flood plain deposits along the Humboldt River and with young alluvium on fan skirts in the lower part of the Antelope Valley. Mifflin and Wheat (14) proposed that the Pleistocene shorelines in Buffalo Valley near Battle Mountain and in the Grass Valley can be correlated with that of ancient Lake Lahontan (late Wisconsin). After the lakes receded, Durorthidic Torriorthents (Bubus series) and Aquic Durorthidic Torriorthents (Gund series) formed on these geomorphic surfaces. Many of these soils are still subject to aggradation. These soils and those exhibiting less soil development are considered to be of the Holocene.

The youngest soils in the area are those that formed in recently aggraded material or in material recently exposed by erosion. These soils have no diagnostic horizons, and they resemble the original parent material. Among these are Aquic Torriorthents (Needle Peak series) and Typic Torriorthents (Fenster series)

that formed in recent alluvium, Typic Torripsamments (Isolde series) that are subject to eolian activity and are on semistabilized sand dunes and dunes superimposed over beach plains, and Lithic Xeric Torriorthents (Tessfive series) and shallow Xeric Torriorthents (Puett series) that formed in material weathered from Tertiary sediment on low, rolling hills where geologic erosion has been active.

Somewhat older are soils that formed in alluvium on axial-stream flood plains, slowly aggrading inset fans, and relatively recently eroded mountain slopes. These soils have been stable long enough to accumulate organic matter and form a mollic epipedon. They do not have a cambic, argillic, natric, or calcic horizon, a duripan, or durinodes. They are probably less than about 1,000 years old. Examples of these soils are Fluvaquentic Haplaquolls (Paranat series) on axial-stream flood plains, Cumulic Haplaquolls (Welch series) on inset fans in narrow mountain valleys, and Aridic Haploxerolls (Loncan series) and Lithic Haploxerolls (Gando series) on mountain slopes.

Soils that formed in alluvium and have subsurface horizons that contain durinodes or are weakly cemented with silica are also older than the youngest soils in the area and possibly are slightly older than the soils that have a dark A horizon as their only diagnostic feature. These soils formed in salt- and sodium-affected parent material that contains appreciable amounts of volcanic ash. They are on lake plains, alluvial flats, and alluvial-flat remnants. The content of soluble silica in the volcanic ash and the alkalinity and fluctuating water table probably contributed to the relatively rapid formation of durinodes and incipient silica cementation. Examples of these soils are Aquic Durorthidic Torriorthents (Gund series) on lake plains, Aeric Halaquepts (Ocala series) on alluvial flats, and Durorthidic Torriorthents (Bubus series) on alluvial-flat remnants.

Stable Holocene land surfaces that are 2,000 to 8,000 years old are extensive in the survey area (8, 9). The soils that formed on these surfaces have a cambic horizon and are cemented with silica in some areas. These soils are on fan skirts, offshore bars, lagoons, and foothills. Examples are Xerollic Camborthids (McConnel series) on offshore bars, Duric Camborthids (Creemon series) in lagoons, and Xerollic Camborthids (Minat series) on foothills.

The landscape in some areas is less stable and was stripped by erosion during the late Wisconsin period, exposing a relict duripan. Following redeposition during the mid to early Holocene, thin layers of loess and loamy alluvium from surrounding areas covered these relict subsurface horizons. Soil development in this material is minimal. Xerollic Durorthids (Chiara series)

on fan piedmonts and Typic Durorthids (Osoll series) on foothills are examples of soils that developed in this material.

*Wisconsin.*—Deposits of Wisconsin age are widely distributed in the survey area. Early Wisconsin deposits on fan and stream terraces generally are more extensive and coarser than those of the late Wisconsin and early Holocene. A widespread veneer of loess covered these coarse deposits during the mid-Wisconsin. Typically, these deposits are on the higher geomorphic surfaces and are dissected. Morrison (18) proposed that a weathering profile, the Churchill soil in the Lake Lahontan area, be used to differentiate early Wisconsin from late Wisconsin deposits. Hawley and Wilson (12) tentatively correlated a soil of similar age in the Winnemucca area. Soils in this survey area that consist of loess-influenced alluvium over coarse alluvium have characteristics similar to those of the soils correlated in the Winnemucca area. An example of these soils is Duric Natrargids (Beoska series). They are considered to be mid-Wisconsin age.

About half of the soil series in the survey area are late Wisconsin to pre-Wisconsin age. These soils are mainly on mountains, plateaus, foothills, and fan piedmonts. Because extensive areas of these soils are present, it is evident that excessive erosion and deposition have not taken place since the late Pleistocene, when the climate stabilized.

Stable late Wisconsin or early Holocene land surfaces are not believed to be extensive in this survey area. Soils that formed on these surfaces have a thin or weak argillic horizon. An example is Xerollic Haplargids (Genaw series), which are on low, rolling hills. These soils have a thin, medium textured argillic horizon underlain by soft bedrock at a depth of less than 20 inches.

Stable mid-Wisconsin land surfaces are extensive in this survey area. The soils on these surfaces have a dominantly fine-loamy or loamy-skeletal argillic or natric horizon. Durixerollic Haplargids (Allor series) on fan piedmonts are examples of soils that have an argillic horizon, Duric Natrargids (Ricert series) on fan piedmonts are examples of soils that have a natric horizon, Lithic Xerollic Haplargids (Old Camp series) on foothills are examples of soils that have an argillic horizon, and Aridic Argixerolls (Reluctan series) and Typic Argixerolls (Clan Alpine series) are examples of soils on mountain slopes.

Stable early Wisconsin land surfaces are extensive in this area. These soils have a well developed argillic horizon. They are on the older land surfaces where the original subsurface horizons have not been eroded or deeply buried by sediment. Haploxerollic Nadurargids (Filiran series), which have a thick natric horizon and a

thick duripan, are examples of these soils on fan piedmonts. Xerollic Haplargids (Roca series), which have a clayey-skeletal argillic horizon and formed in residuum, are examples of these soils on foothills. Aridic Argixerolls (Chad and Walti series), which have a clayey argillic horizon and formed in residuum, are examples of these soils on mountain slopes.

*Pre-Wisconsin.*—These alluvial deposits are limited in the survey area. Two pre-Wisconsin deposits are recognized by Morrison (18)—one that is similar to soils of the Kansan Glaciation (pre-Cocoon soils) and a younger one that is somewhat less dissected, is at somewhat lower elevations, and is similar to soils of the Illinois Glaciation (Cocoon soils). Examples of soils in this survey area that are similar to these soils in age are those of the Kingingham and Wieland series, respectively.

Stable pre-Wisconsin land surfaces are moderately extensive in this area. These surfaces have been deeply dissected and are on fan piedmont remnants and partial ballenas bordering mountain slopes. Because these surfaces have been relatively stable since they were dissected, the soils that developed on them are considered to be the oldest in the survey area. Xerollic Durargids (Buffaran series) and Aridic Durixerolls (Stampede series) are examples of soils on fan piedmont remnants. These soils generally have a thick, clayey argillic horizon and a thick duripan. Xerollic Paleargids (Zoesta series), which have a thick argillic horizon that is 45 to 60 percent clay, are examples of soils that formed on partial ballenas.

## Relief

Relief is the shape of the landscape. It is determined by the position of the water table, percent of slope, length of slope, shape of slope (convex or concave), and exposure to wind and sun. Any activity on a slope that affects the soil, including erosion and deposition, affects soil formation (13).

The landscapes in this survey area are dominated by subparallel mountain ranges rising abruptly from broad alluvium-filled valleys. Fan piedmonts and fan skirts slope downward from the mountains until they merge with alluvial flats and into central playas or axial-stream flood plains (22).

The mountain ranges mainly are characterized by excessive relief. The soils in these positions are well drained. Runoff is rapid or very rapid, and the hazard of erosion is severe. Mountain slopes that are only partially stabilized are subject to a high rate of geologic erosion, and soil development on these slopes primarily is limited to an accumulation of organic matter that forms a mollic epipedon. Lithic Haploxerolls (Gando

series) and Lithic Xeric Torriorthents (Attella series) are examples of soils on these slopes. Soil formation has been unable to act on parent material long enough for a cambic or argillic horizon to form in these soils.

Mountain slopes that are more stable are subject to a slower rate of geologic erosion, and an argillic horizon has formed in the soils on these slopes. Xerollic Haplargids (Trunk series) and Aridic Argixerolls (Sumine series) are examples.

Most of the foothills and mountains exhibit pronounced aspect-related differences in microclimate. Some soils on steep, north-facing slopes at the lower elevations are similar to soils on all aspects at the higher elevations, and some soils on steep, south-facing slopes at the higher elevations are similar to soils at the lower elevations (6, 13).

Fan piedmonts flank the mountain ranges. The soils in these positions are well drained. Runoff is slow or medium, and the hazard of erosion is slight or moderate. The fan piedmonts typically are dissected because the stream channel has been altered as a result of changes in climate or local faulting. This dissection has resulted in the formation of smooth areas on the summits of fan piedmont remnants, younger side slopes of fan piedmont remnants, and very young inset fans along drainageways. Duric Natrargids (Oxcotel series) and Haploxerollic Durargids (Novacan series) are examples of soils on the summits of fan piedmont remnants, Durixerollic Camborthids (Orovada series) are examples of soils on the side slopes of fan piedmont remnants, and Typic Torriorthents (Fenster series) are examples of soils on inset fans.

Fan skirts are extensive in this area. They border the fan piedmonts and extend to the alluvial flats. The soils in these positions are well drained. Runoff is slow or medium, and the hazard of erosion is slight or moderate. These surfaces are relatively smooth and are not dissected. Durixerollic Camborthids (Rasille series), Typic Camborthids (Whirlo series), and Duric Camborthids (Broyles series) are examples of soils on fan skirts.

Remnants of flood plains, alluvial flats, and lake plains originally had a high water table and were flooded. The fluctuating water table combined with the high content of volcanic ash and the alkalinity of the parent material produced horizons that have firm durinodes or are cemented with silica. As the streams slowly downcut the flood plains and the lakes receded in the bolsons, subtle dissection took place. This dissection left stable flood-plain, alluvial-flat, and lake-plain remnants that had water tables at a lower depth and were subject to little or no flooding. The soils in these positions are moderately well drained or well drained. Runoff is slow, and the hazard of erosion is

slight. These soils contain soluble salts. Durorthidic Torriorthents (Bubus series) are examples of soils on alluvial-flat and lake-plain remnants.

The soils on alluvial flats and lake plains are somewhat poorly drained. Runoff is slow, and the hazard of erosion is slight. These soils have horizons that are cemented with silica to various degrees. The soils are light colored, and they contain soluble salts. Aeris Halaquepts (Umbertland and Ocala series) are examples of soils in these areas.

The soils on the nearly level axial-stream flood plains along the Reese River are poorly drained or very poorly drained. Runoff is very slow. Most areas of these soils are subject to flooding, and some areas are subject to deposition. The soils in these areas support dense stands of meadow vegetation that contributes large amounts of organic matter; thus, these soils have a thin to thick, dark A horizon. Some of these soils have excess soluble salts in the upper horizons. Fluvaquentic Haplaquolls (Paranat series) and Aeris Fluvaquents (Sonoma series) are examples of soils in these positions.

## Parent Material

Parent material is the weathered rock or unconsolidated material from which soils form. The hardness, grain size, and porosity of the parent material and its mineralogic and chemical composition greatly influence soil formation. The parent material in this survey area is mainly material derived from sedimentary rock and associated metamorphic rock, material derived from intrusive and extrusive volcanic rock, and colluvium, alluvium, lacustrine sediment, and eolian material.

The sedimentary rock in the area includes shale, chert, conglomerate, and breccia and localized areas of limestone and dolostone. The soils in the New Pass and Toiyabe Ranges and the Desatoya, Shoshone, and Simpson Park Mountains formed in material derived from sedimentary rock. Most of the material contains minerals that weather to clay. The soils that formed on stable landscapes have an argillic horizon. Lithic Argixerolls (Itca series) and Aridic Argixerolls (Walti series) are examples of these soils. In some areas the soils have not been stable long enough for an argillic horizon to form. Aridic Haploxerolls (Loncan series) and Lithic Xeric Torriorthents (Attella series) are examples of these soils.

Late Tertiary sedimentary rock occurs primarily along the ancient alluvial divides between the Reese River, Carico Lake, and Grass Valleys. This material consists of older alluvium and lakebed deposits derived from interbedded tuffaceous shale, diatomaceous shale,

siltstone, sandstone, and conglomerate. The older alluvium has remained stable for long periods and contains rock fragments and minerals that weather to clay. Typic Haplargids (Spike series) are examples of soils on older, stable surfaces that have an argillic horizon. The lakebed deposits are severely dissected and resemble low, rolling hills. The summits have been stable for short periods of time, and the side slopes are actively eroding and are too unstable for an argillic horizon to form. Xerollic Haplargids (Genaw series) are examples of soils on the stable summits. Xeric Torriorthents (Puett series) and Typic Torriorthents (Perlor series) are examples of shallow, weakly developed soils on the unstable side slopes.

The volcanic rock in the area includes andesite, rhyolite, ashflow tuff, basalt, and small, localized areas of granite. The soils in parts of the New Pass Range, the Shoshone and Simpson Park Mountains, and the Toiyabe Range derived from volcanic rock. This rock contains large amounts of minerals that weather to clay; therefore, most of the soils that formed in this material on stable landforms have an argillic horizon. Lithic Argixerolls (Ninemile series) and Xerollic Haplargids (Bucan series) are examples.

The colluvium, alluvium, and basin fill material in adjacent valleys are derived mainly from sedimentary and volcanic rock. The soils in the valleys throughout the area are strongly influenced by pyroclastic material from this rock. Those derived from the more siliceous rock, particularly chert and tuff, have layers of silica cementation.

Colluvium has accumulated on steep mountain slopes as a result of gravitational forces and mass wasting. The colluvium generally is poorly sorted, contains many rock fragments, and includes minerals that weather to clay. Many of these areas have not

been stable long enough for an argillic horizon to form. Xerollic Camborthids (Minat series) are examples of soils that formed in colluvium on steep mountain slopes.

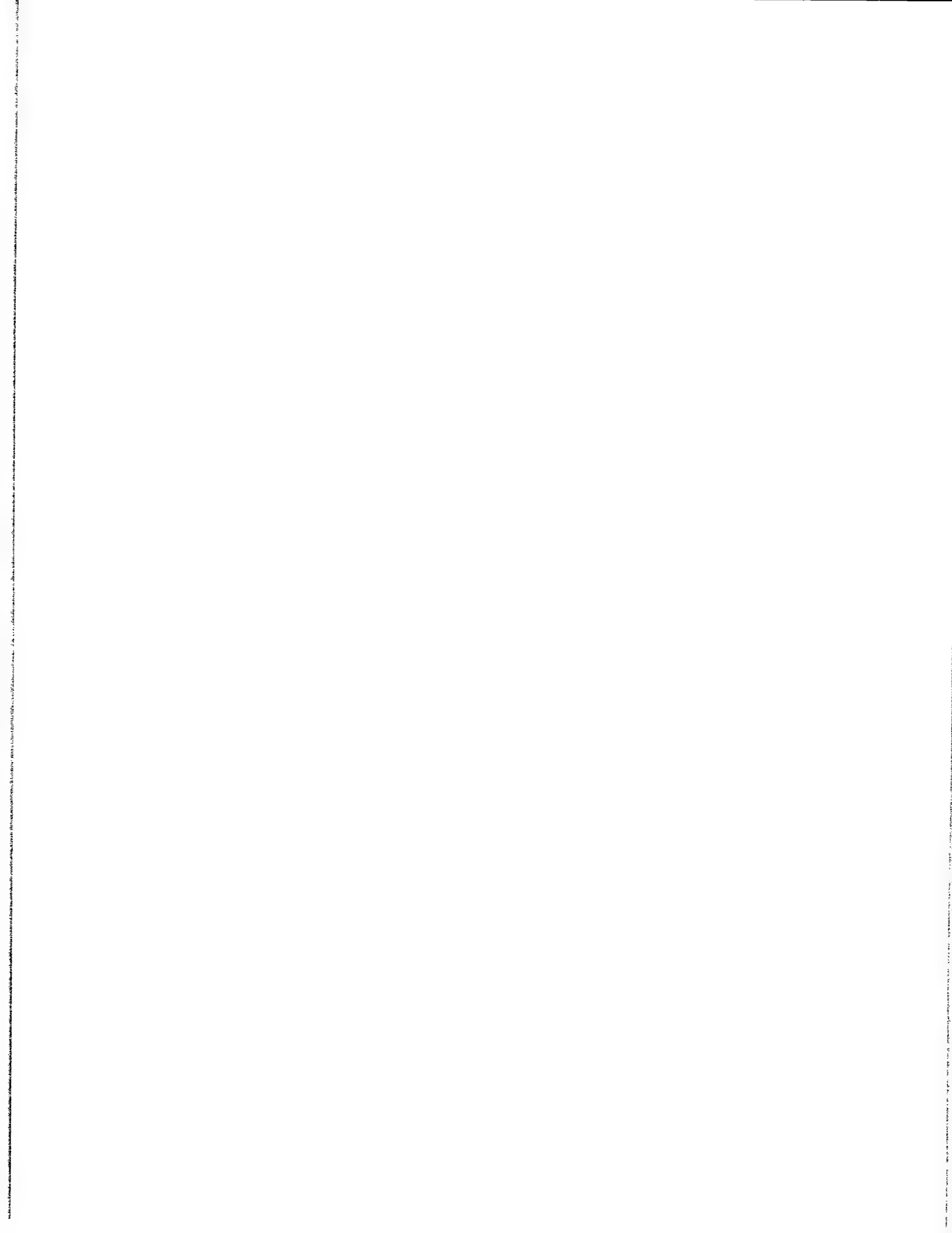
Alluvium derived from various kinds of rock and deposited as fan piedmonts is mostly loamy and contains pebbles, cobbles, and stones. It is porous, contains minerals that weather to clay, and contains soluble silica that results in the cementation of horizons. Haploxerollic Nadurargids (Filiran series) and Xerollic Durargids (Buffaran series) are examples of soils that formed on stable fan piedmonts. These soils have an argillic horizon and a duripan.

Alluvium deposited as fan skirts below the fan piedmonts consists of loamy and silty material mixed with loess that is high in content of volcanic ash. Some localized areas along drainageways contain pebbles, cobbles, and stones. The soils in these areas typically have horizons that are cemented with silica. Examples of soils that formed on fan skirts are Durorthidic Torriorthents (Misad series) and Duric Camborthids (Relley series).

Alluvium deposited as alluvial flats and flood plains below the fan skirts consists of silty and clayey material. Soluble salts are common in some of the soils in these areas. Although this material contains minerals that can be weathered, the soils are young and exhibit limited soil development. Aeric Halaquepts (Ocala series) and Fluvaquentic Haplaquolls (Paranat series) are examples.

Sandy eolian material is of limited extent in this survey area. It occurs mainly in the Grass Valley. Typic Torripsamments (Isolde series), which formed in wind-active areas on semistabilized dunes and on dunes superimposed over beach plains, are examples of soils that formed in this material.





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# Glossary

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**Aggregate, soil.** Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

**Alkali (sodic) soil.** A soil having so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases) that plant growth is restricted. The degrees of alkalinity (sodicity) are expressed as an exchangeable sodium percentage. They are:

Nonalkali.....	less than 15
Slightly alkali.....	15 to 40
Strongly alkali.....	more than 40

**Alkaline soil.** A soil having so a high degree of alkalinity (pH 8.5 or higher) that plant growth is restricted.

**Alluvial fan.** A semiconical, or fan-shaped, constructional, major landform that is mainly stratified alluvium with debris flow deposits in some areas. It is on the upper margin of a piedmont slope, and its apex is a source of alluvium debouching from a mountain valley into an intermontane basin. Also, a generic term for similar landforms in various other landscape positions.

**Alluvial flat.** The nearly level alluvial surface between a piedmont slope and the playa of a bolson or the axial-stream flood plain of a semibolson. This landform can include both recent and relict components.

**Alluvium.** Material, such as sand, silt, or clay, deposited on land by streams.

**Animal-unit-month (AUM).** The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

**Area reclaim** (as a restrictive feature). An area difficult to reclaim after the removal of soil for construction and other uses.

**Association, soil.** A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

**Available water capacity (available moisture capacity).** The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil.

**Back slope.** The slope component that is the steepest, straight to concave or merely concave middle portion of an erosional slope.

**Badland.** Steep or very steep, commonly nonstony, barren land dissected by many intermittent drainage channels. Badland is most common in semiarid and arid regions where streams are entrenched in soft geologic material. Local relief generally ranges from 25 to 500 feet. Runoff potential is very high, and geologic erosion is active.

**Ballena.** A major landform comprised of distinctively round-topped ridgeline remnants of fan alluvium. The broadly rounded shoulder slopes of the ridge meet from either side to form a narrow crest and merge smoothly with the concave back slopes. In ideal examples, the slightly concave foot slopes of adjacent ballenas merge to form a smoothly rounded drainageway.

**Bar** (offshore and barrier). A component landform comprised of elongated, commonly curving, low ridges of well sorted sand and gravel that stand above the general level of a bolson floor. It is the result of the wave action of a Pleistocene lake.

**Basal area.** The area of a cross section of a tree. It is a measure of stand density, commonly expressed in square feet. For pinyon pine and juniper stands, it is the section at a height of 1 foot and measured outside the bark.

**Base saturation.** The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation-exchange capacity.

**Basin.** A general term for an intermontane basin, a bolson, a semibolson, an area of centripetal

drainage, or a structural depressional area.

**Basin floor.** The lowermost, nearly level major physiographic part of a bolson or semibolson. It includes all alluvial, eolian, and erosional landforms that are below the piedmont slopes.

**Basin-floor remnant.** A generally flat-topped erosional remnant of a basin floor that has been dissected by an axial stream.

**Beach plain.** A major landform of bolson floors comprised of numerous, closely spaced offshore bars and intervening lagoons. It is the result of a receding Pleistocene lake.

**Beach terrace.** A component landform that is on the lower piedmont slope. It consists of a wavecut scarp and wavebuilt terrace of well sorted sand and gravel marking a still-stand of a Pleistocene lake.

**Bedrock.** The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

**Bolson.** An internally drained intermontane basin.

**Bolson floor.** The specific identification of the floor of a bolson, as compared with the floor of a semibolson; both are basin floors.

**Boulders.** Rock fragments larger than 2 feet (60 centimeters) in diameter.

**Brush management.** Use of mechanical, chemical, or biological methods to reduce or eliminate competition of woody vegetation to allow understory grasses and forbs to recover or to make conditions favorable for reseeding. It increases production of forage, which reduces the hazard of erosion. Brush management may improve the habitat for some species of wildlife.

**Calcareous soil.** A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

**Canopy.** The leafy crown of trees or shrubs. (See Crown.)

**Cemented pan** (as a restrictive feature). A cemented pan is too close to the surface for the specified use.

**Channel.** The bed of a single or braided waterway that commonly is barren of vegetation. Channels form in young alluvium. They may be enclosed by banks, or they may be splayed across a fan surface and slightly mounded above it. They may include bars and dumps of cobbles and stones. Channels, except flood-plain playas, are landform elements.

**Chemical treatment.** Control of unwanted vegetation by use of chemicals.

**Clay.** As a soil separate, the mineral soil particles less

than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

**Clay film.** A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

**Coarse textured soil.** Sand or loamy sand.

**Cobble (or cobblestone).** A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

**Cobbly soil material.** Material that is 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material is 35 to 60 percent of these rock fragments, and extremely cobbly soil material is more than 60 percent.

**Colluvium.** Soil material, rock fragments, or both moved by creep, slide, or local wash and deposited at the base of steep slopes.

**Complex, soil.** A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

**Component landform.** A feature of the earth's surface that is part of a major landform and was created by partial dissection of the major landform or by alluvial or eolian accretion. A component landform is the smallest type of landform that can be described as a single unit. Its morphological parts are called landform elements. A side slope element can be subdivided into slope components.

**Conglomerate.** A coarse grained, clastic rock composed of rounded to subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer material. Conglomerate is the consolidated equivalent of gravel.

**Conservation cropping system.** Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

**Consistence, soil.** The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

*Loose.*—Noncoherent when dry or moist; does not hold together in a mass.

*Friable.*—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

*Firm.*—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

*Plastic.*—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a “wire” when rolled between thumb and forefinger.

*Sticky.*—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

*Hard.*—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

*Soft.*—When dry, breaks into powder or individual grains under very slight pressure.

*Cemented.*—Hard; little affected by moistening.

**Control section.** The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

**Coppice dune.** A small dune of fine grained soil material stabilized around shrubs or small trees.

**Corrosive.** High risk of corrosion to uncoated steel or deterioration of concrete.

**Cover crop.** A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

**Crest.** The slope component comprising a very narrow, commonly linear top of an erosional ridge, hill, mountain, or other landform.

**Crop residue management.** Returning crop residue to the soil. Crop residue management helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

**Cropping system.** Growing crops using a planned system of rotation and management practices.

**Crown.** The upper part of a tree or shrub, including the living branches and their foliage.

**Cutbanks cave** (as a restrictive feature). The walls of excavations tend to cave in or slough.

**Decreasers.** The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

**Deep to water** (as a restrictive feature). The soil is deep to a permanent water table during dry periods.

**Deferred grazing.** Postponing or arresting grazing for a prescribed period.

**Depth (soil depth).** Depth to a restricting layer is measured from the soil surface. The restricting layer is either a duripan (strongly cemented or indurated) or consolidated bedrock (soft or hard). The depth classes used in this survey are—

Very shallow .....	less than 10 inches
Shallow .....	10 to 20 inches
Moderately deep .....	20 to 40 inches
Deep .....	40 to 60 inches
Very deep .....	more than 60 inches

**Depth to rock** (as a restrictive feature). Bedrock is too near the surface for the specified use.

**Desert pavement.** A layer of gravel or coarser fragments on a desert soil surface that was emplaced by the upward movement of fragments from underlying sediment or that remains after finer particles have been removed by running water or wind.

**Drainage class** (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

*Excessively drained.*—These soils have very high and high hydraulic conductivity and low water-holding capacity. They are not suited to crop production unless irrigated.

*Somewhat excessively drained.*—These soils have high hydraulic conductivity and low water-holding capacity. Without irrigation, only a narrow range of crops can be grown and yields are low.

*Well drained.*—These soils have intermediate water-holding capacity. They retain optimum amounts of moisture, but they are not wet close enough to the surface or long enough during the growing season to adversely affect yields.

*Moderately well drained.*—These soils are wet close enough to the surface or long enough that planting or harvesting operations or yields of some field crops are adversely affected unless artificial drainage is provided. Moderately well drained soils commonly have a layer with low hydraulic conductivity, a wet layer relatively high in the profile, additions of water by seepage, or some combination of these.

*Somewhat poorly drained.*—These soils are wet

close enough to the surface or long enough that planting or harvesting operations or crop growth is markedly restricted unless artificial drainage is provided. Somewhat poorly drained soils commonly have a layer with low hydraulic conductivity, a wet layer high in the profile, additions of water through seepage, or a combination of these.

**Poorly drained.**—These soils commonly are so wet at or near the surface during a considerable part of the year that field crops cannot be grown under natural conditions. Poorly drained conditions are caused by a saturated zone, a layer with low hydraulic conductivity, seepage, or a combination of these.

**Very poorly drained.**—These soils are wet to the surface most of the time. They are wet enough to prevent the growth of important crops (except rice) unless artificially drained.

**Drainage, surface.** Runoff, or surface flow of water, from an area.

**Draw.** A small stream valley that generally is more open and has broader bottom land than a ravine or gulch.

**Droughty** (as a restrictive feature). The soil holds too little water for plants during dry periods.

**Duff.** A term used to identify a generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

**Effervescence.** A soil quality measured when drops of diluted (1:10) hydrochloric acid (HCl) are added to the soil. The ratings are as follows:

Very slightly effervescent . . . . . few bubbles  
Slightly effervescent . . . . . bubbles readily  
Strongly effervescent . . . . . bubbles form low foam  
Violently  
effervescent . . . bubbles form thick foam quickly

**Eluviation.** The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

**Eolian soil material.** Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

**Ephemeral stream.** A stream or reach of a stream that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

**Erodes easily** (as a restrictive feature). Water erodes the soil easily.

**Erosion.** The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

**Erosion** (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

**Erosion** (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes the surface.

**Erosion pavement.** A layer of gravel or stones that remains on the surface after fine particles are removed by sheet or rill erosion.

**Escarpment.** A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and produced by erosion or faulting. Synonym: scarp.

**Excess fines** (as a restrictive feature). Excess silt and clay are in the soil. The soil does not provide a source of gravel or sand for use in construction.

**Excess salt** (as a restrictive feature). The soil has excess water-soluble salts that restrict the growth of most plants.

**Excess sodium** (as a restrictive feature). The soil has excess exchangeable sodium that restricts the growth of plants.

**Extrusive rock.** Igneous rock derived from deep-seated molten matter (magma) emplaced on the earth's surface.

**Fan apron.** A component landform consisting of a sheetlike mantle of relatively young alluvium that partially covers the surface of an older fan piedmont or, in some places, an alluvial fan. A fan apron buries a pedogenic soil.

**Fanlette.** A very small, normally undissected alluvial fan, something less than a few tenths of a square mile in area, that may occur below a gully, inset fan, or ravine in a variety of positions on the piedmont slope or within mountain valleys.

**Fan piedmont.** The most extensive major landform of most piedmont slopes. It is formed by the lateral coalescence of mountain-front alluvial fans into one generally smooth slope and by accretion of fan aprons. Fan piedmonts commonly are complexes of many component landforms.

**Fan remnant.** A generic term for a component landform that is the remainder of various older fans that

have been dissected (erosional fan remnants) or partially buried (nonburied fan remnants). Erosional fan remnants have a flattish summit that consists of a relict fan surface; nonburied fan remnants consist entirely of a relict fan surface. Fan remnants may also be specifically identified, for example, fan-piedmont remnants, fan-skirt remnants, or inset-fan remnants.

**Fan-remnant side slope.** A landform element comprised of the relatively young erosional slope around the sides of an erosional fan remnant. It is composed of shoulder slopes, back slopes, and foot slopes.

**Fan skirt.** A major landform comprised of laterally coalescing, small alluvial fans that originate from gullies that are cut into or that extend from inset fans of a fan piedmont and merge along their toe slopes with the basin floor. Fan skirts are smooth or only slightly dissected.

**Fine textured soil.** Sandy clay, silty clay, and clay.

**Flooding** (as a restrictive feature). The soil is flooded by moving water from stream overflow, runoff, or high tides.

**Flood plain.** The transversely level floor of an axial stream of a semibolson or of a major desert stream valley that is occasionally or regularly alluviated by the stream overflowing its channel during periods of flooding.

**Flood-plain playa.** A component landform consisting of very low gradient, barren, axial stream segments in an intermontane basin. It is subject to broad and shallow floods and is veneered with barren, fine textured sediment that crusts. A flood-plain playa commonly is segmented by transverse, narrow bands of vegetation, and it may alternate with ordinary, narrow or braided channel segments.

**Foothill.** A steeply sloping upland that has relief of as much as 1,000 feet (300 meters) and fringes a mountain range or high-plateau escarpment.

**Foot slope.** The relatively gently sloping, slightly concave slope component of an erosional slope that is at the base of the back slope component. Synonym: pediment.

**Forb.** Any herbaceous plant not a grass or a sedge.

**Frost action** (as a restrictive feature). The moisture in the soil freezes and thaws. Frost action can damage roads, buildings, and other structures.

**Genesis, soil.** The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

**Gleyed soil.** Soil that formed under poor drainage, resulting in the reduction of iron and other

elements in the profile and in gray colors and mottles.

**Gravelly soil material.** Material that is 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, up to 3 inches (7.6 centimeters) in diameter. Very gravelly soil material is 35 to 60 percent of these rock fragments, and extremely gravelly soil material is more than 60 percent.

**Hard bedrock.** Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

**Hardpan.** A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by silica or calcium carbonate.

**Hard to pack** (as a restrictive feature). The soil is difficult to compact.

**Hill.** A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

**Horizon, soil.** A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. The major horizons are as follows:

*O horizon.*—An organic layer of fresh and decaying plant residue.

*A horizon.*—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

*B horizon.*—The mineral horizon below an O, A, or E horizon. The B horizon is in part a layer of transition from the overlying horizon to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) granular, prismatic, or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

*E horizon.*—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.



**C horizon.**—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, the number 2 precedes the letter C.

**R layer.**—Hard, consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon but can be directly below an A or a B horizon.

**Hydrologic soil groups.** Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff rate. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

**Igneous rock.** Rock formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rock. Examples are andesite, basalt, and granite.

**Illuviation.** The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

**Infiltration.** The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

**Inset fan.** The flood plain of a commonly ephemeral stream that is confined between fan remnants, basin-floor remnants, ballenas, or closely opposed fan toe slopes. Its transversely level cross section is evidence of alluviation of a fluve. It is wide enough that raw channels cover only a fraction of its surface.

**Intermittent stream.** A stream or reach of a stream that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

**Irrigation.** Application of water to soils to assist in production of crops.

**Lacustrine deposit** (geology). Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

**Lake plain.** A major landform of some bolson floors that is nearly level and consists of fine textured, stratified bottom sediment of a Pleistocene lake.

**Lake-plain terrace.** A somewhat elevated area and component landform of a lake plain.

**Landform element.** The morphological part of a component landform. Side slope landform elements may be divided into slope components.

**Large stones** (as a restrictive feature). The soil has rock fragments that are 3 inches (7.6 centimeters) in diameter or more.

**Leaching.** The removal of soluble material from soil or other material by percolating water.

**Liquid limit.** The moisture content at which the soil passes from a plastic to a liquid state.

**Loam.** Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

**Loess.** Fine grained material, dominantly of silt-sized particles, deposited by wind.

**Low strength** (as a restrictive feature). The soil is not strong enough to support a load.

**Major landform.** A subdivision of the piedmont slope or basin floor major physiographic part that reflects a major morphogenetic process taking place over a long period or that is the result of a special erosional or depositional process. Many major landforms are dissected, and their original area is occupied by component landforms.

**Major physiographic part.** The very large part of an intermontane basin that is characterized by dominant slope and position and is comprised of major landforms (e.g., steeply sloping mountains that stand above less sloping piedmonts that in turn grade to nearly level basin floors).

**Mechanical treatment.** Use of mechanical equipment for seeding, brush management, and other management practices.

**Medium textured soil.** Very fine sandy loam, loam, silt loam, or silt.

**Metamorphic rock.** Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

**Miscellaneous area.** An area that has little or no natural soil and supports little or no vegetation.

**Moderately coarse textured soil.** Coarse sandy loam, sandy loam, and fine sandy loam.

**Moderately fine textured soil.** Clay loam, sandy clay loam, and silty clay loam.

**Morphology, soil.** The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

**Mottling, soil.** Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: Abundance—*few*, *common*, and *many*; size—*fine*, *medium*, and *coarse*; and contrast—*faint*, *distinct*, and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

**Mountain.** A natural elevation of the land surface, rising more than 1,000 feet above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides and considerable bare-rock surface. A mountain can occur as a single, isolated mass or in a group forming a chain or range.

**Mountain-valley fan.** A major landform that is the result of alluvial filling of a mountain valley or intramontane basin by coalescent valley-side slope fans whose toe slopes meet from either side of the valley along an axial drainageway. It is an extension of the upper piedmont slope into mountain valleys. Most mountain-valley fans have been dissected.

**Mudstone.** Sedimentary rock formed by induration of silt and clay in approximately equal amounts.

**Munsell notation.** A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

**Neutral soil.** A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

**Nutrient, plant.** Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

**Organic matter.** Plant and animal residue in the soil in various stages of decomposition.

**Pan.** A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan* or *claypan*.

**Parent material.** The unconsolidated organic and mineral material in which soil forms.

**Pebbles.** Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

**Ped.** An individual natural soil aggregate, such as a granule, a prism, or a block.

**Pediment.** The foot slope component of an erosional slope.

**Pedon.** The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

**Percolation.** The downward movement of water through the soil.

**Permeability.** The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

Very slow .....	less than 0.06 inch
Slow .....	0.06 to 0.2 inch
Moderately slow .....	0.2 to 0.6 inch
Moderate .....	0.6 inch to 2.0 inches
Moderately rapid .....	2.0 to 6.0 inches
Rapid .....	6.0 to 20.0 inches
Very rapid .....	more than 20.0 inches

**Phase, soil.** A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

**pH value.** A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

**Piping** (as a restrictive feature). Water moving through the soil forms subsurface tunnels or pipelike cavities.

**Plasticity index.** The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

**Plastic limit.** The moisture content at which a soil changes from semisolid to plastic.

**Plateau.** An extensive upland mass with relatively flat summit area that is considerably elevated (more than 100 meters) above the adjacent lowlands and separated from them on one or more sides by escarpments.

**Playa.** An ephemerally flooded, barren area on a basin floor that is veneered with fine textured sediment and acts as a temporary or final sink for drainage water.

**Ponding.** Standing water on soils in closed depressional areas. The water can be removed

only by percolation or evapotranspiration.

**Poorly graded.** Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

**Potential native plant community.** The plant community on a given site that will be established if present environmental conditions continue to prevail and the site is properly managed.

**Potential rooting depth (effective rooting depth).**

Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

**Prescribed burning.** The application of fire to land under such conditions of weather, soil moisture, and time of day as presumably will result in the intensity of heat and spread required to accomplish specific forest management, wildlife, grazing, or fire hazard reduction purposes.

**Profile, soil.** A vertical section of the soil extending through all its horizons and into the parent material.

**Proper grazing use.** Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. Proper grazing use increases the vigor and reproduction of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

**Range condition.** The present composition of the plant community on a range site in relation to the potential natural plant community for that site. Range condition is expressed as excellent, good, fair, or poor on the basis of how much the present plant community has departed from the potential.

**Rangeland.** Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

**Range site.** An area of rangeland where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. A range site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other range sites in kind or proportion of species or total production.

**Reaction, soil.** A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction

because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are—

Extremely acid . . . . .	below 4.5
Very strongly acid . . . . .	4.5 to 5.0
Strongly acid . . . . .	5.1 to 5.5
Medium acid . . . . .	5.6 to 6.0
Slightly acid . . . . .	6.1 to 6.5
Neutral . . . . .	6.6 to 7.3
Mildly alkaline . . . . .	7.4 to 7.8
Moderately alkaline . . . . .	7.9 to 8.4
Strongly alkaline . . . . .	8.5 to 9.0
Very strongly alkaline . . . . .	9.1 and higher

**Relict.** Old, or remaining from previous times; in the present context, of Pleistocene age.

**Relief.** The elevations or inequalities of a land surface, considered collectively.

**Remnant.** The remainder of a larger landform or of a land surface that has been dissected or partially buried.

**Residuum (residual soil material).** Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

**Rock fragments.** Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

**Rooting depth (as a restrictive feature).** The soil is shallow to a layer that greatly restricts roots; shallow root zone.

**Root zone.** The part of the soil that can be penetrated by plant roots.

**Runoff.** The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water. Six classes of runoff are recognized:

**Ponded.**—Little of the precipitation and run-on escapes as runoff, and free water stands on the surface for significant periods. The amount of water that must be removed from ponded areas by movement through the soil, by plants, or by evaporation is usually greater than the total rainfall. Ponding normally occurs in level to nearly level depressional areas, and the water depth may fluctuate greatly.

**Very slow.**—Surface water flows away slowly, and free water stands on the surface for long periods or immediately enters the soil. Most of the water passes through the soil, is used by plants, or evaporates. The soils commonly are level or nearly level or are very open and porous.

**Slow.**—Surface water flows away slowly enough

that free water stands on the surface for moderate periods or enters the soil rapidly. Most of the water passes through the soil, is used by plants, or evaporates. The soils commonly are either nearly level or very gently sloping, or they are steeper but absorb precipitation very rapidly.

*Medium.*—Surface water flows away fast enough that free water stands on the surface for only short periods. Part of the precipitation enters the soil and is used by plants, is lost by evaporation, or moves into underground channels. The soils commonly are either nearly level or gently sloping and absorb precipitation at a moderate rate, or they are steeper but absorb water rapidly.

*Rapid.*—Surface water flows away fast enough that the period of concentration is brief and free water does not stand on the surface. Only a small part of the water enters the soil. The soils are mainly moderately steep or steep, and they have a moderate to slow rate of absorption.

*Very rapid.*—Surface water flows away so fast that the period of concentration is very brief and free water does not stand on the surface. Only a small part of the water enters the soil. The soils are mainly steep or very steep, and they absorb precipitation slowly.

**Run-on.** Soil moisture received as runoff from adjacent areas.

**Saline soil.** A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium. The conductivity of extract, in millimhos per centimeter, is expressed as—

Nonsaline .....	0 to 4
Slightly saline .....	4 to 8
Moderately saline.....	8 to 16
Strongly saline.....	more than 16

**Sand.** As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

**Sand dune.** A component landform made up of eolian, sand-sized mineral particles. Dunes commonly are on the leeward side of a Pleistocene lakebed.

**Sand sheet.** A major landform comprised of an extensive layer, several feet thick, of eolian sand from pluvial lake beaches, sometimes partly redeposited by water. It is spread across alluvial flats, onto piedmont slopes, or over low mountains and has an undulating and commonly duned surface.

**Sandstone.** Sedimentary rock containing dominantly sand-sized particles.

**Sedimentary rock.** Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

**Seepage** (as a restrictive feature). The movement of water through the soil. Seepage adversely affects the specified use of the soil.

**Semibolson.** An externally drained intermontane basin.

**Semibolson floor.** A specific identification for the floor of a semibolson as compared with a bolson floor.

**Series, soil.** A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the substratum. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

**Shale.** Sedimentary rock formed by the hardening of a clay deposit.

**Shoulder slope.** The convex slope component at the top of an erosional side slope.

**Shrink-swell** (as a restrictive feature). The soil shrinks when dry and swells when wet.

**Side slope.** The erosional slope around the sides of an erosional fan remnant, hill, ballena, mountain, or other landform. It is composed of shoulder slopes, back slopes, foot slopes, and toe slopes. Also, the planimetrically linear parts of the slopes around a digitately dissected fan remnant or hill or other landform as compared with the planimetrically convex nose slope and concave head slope parts.

**Silica.** A combination of silicon and oxygen. The mineral form is called quartz.

**Silt.** As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

**Siltstone.** Sedimentary rock made up of dominantly silt-sized particles.

**Similar soils.** Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

**Site index.** A designation of the quality of a forest site. For pinyon pine and juniper stands, it is based on tree diameter at a height of 1 foot and the spacing between trees.

**Slope.** The inclination of the land surface from the horizontal. Percentage of slope is the vertical

distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey the following slope classes are recognized:

Nearly level .....	0 to 2 percent
Gently sloping .....	2 to 4 percent
Moderately sloping .....	4 to 8 percent
Strongly sloping .....	8 to 15 percent
Moderately steep .....	15 to 30 percent
Steep .....	30 to 50 percent
Very steep .....	50 to 75 percent
Extremely steep .....	more than 75 percent

**Slope** (as a restrictive feature). The slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specified use.

**Slope component.** A morphological element of an erosional slope and a morphological subdivision of the side slope landform element.

**Small stones** (as a restrictive feature). The soil has rock fragments that are less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

**Sodic (alkali) soil.** A soil having so high a degree of alkalinity (pH 8.5 or higher), or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

**Sodicity.** The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of  $\text{Na}^+$  to  $\text{Ca}^{++} + \text{Mg}^{++}$ . The degrees of sodicity and their respective ratios are—

Nonsodic .....	less than 13:1
Slightly sodic .....	13-46:1
Strongly sodic .....	more than 46:1

**Soft bedrock.** Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

**Soil.** A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

**Soil blowing** (as a restrictive feature). The soil is easily moved by wind.

**Soil separates.** Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand .....	2.0 to 1.0
Coarse sand .....	1.0 to 0.5
Medium sand .....	0.5 to 0.25
Fine sand .....	0.25 to 0.10
Very fine sand .....	0.10 to 0.05
Silt .....	0.05 to 0.002
Clay .....	less than 0.002

**Solum.** The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the substratum. The living roots and plant and animal activities are largely confined to the solum.

**Stones.** Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 6 to 15 inches (15 to 38 centimeters) in length if flat.

**Stony.** Refers to a soil containing stones in numbers that interfere with or prevent tillage.

**Stony soil material.** Material, commonly a subsurface layer, that contains 15 to 35 percent, by volume, rock fragments that are mainly 10 to 24 inches in diameter. Very stony soil material is 35 to 60 percent stone-sized rock fragments, and extremely stony soil material is more than 60 percent.

**Stream terrace.** A transversely level erosional remnant of a former axial stream or major desert stream flood plain that slopes in the same direction as the adjacent, incised stream and is underlain by well sorted, stratified sand and gravel or by loamy or clayey sediment.

**Structure, soil.** The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

**Subsoil.** Technically, the B horizon; roughly, the part of the solum below plow depth.

**Substratum.** The part of the soil below the solum.

**Subsurface layer.** Any surface soil horizon (A, E, AB, or EB) below the surface layer.

**Surface layer.** The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from about 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

**Summit.** The flattish top of an erosional fan remnant, hill, mountain, or other landform. The term is used

for both a landform element and a slope component.

**Tailwater.** The water just downstream of a structure.

**Talus.** Rock fragments of any size or shape, commonly coarse and angular, derived from and lying at the base of a cliff or very steep rock slope. The accumulated mass of such loose, broken rock formed chiefly by falling, rolling, or sliding.

**Taxadjuncts.** Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior.

**Terrace.** Any part of a general slope that stands above a short, steep scarp and has a generally flat, nearly level or gently sloping summit. It may have another short scarp above the summit. Synonym: bench.

**Texture, soil.** The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, and clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

**Toe slope.** The lowest part of a foot slope component of an erosional slope. It is distinguished from the upper part of a foot slope by a greater accumulation of pedisegment. Also, the lowest and most gently sloping part of a slope.

**Too arid** (as a restrictive feature). The soil is dry most of the time, and vegetation is difficult to establish.

**Too clayey** (as a restrictive feature). The soil is slippery

and sticky when wet and is slow to dry.

**Too crusty** (as a restrictive feature). Crusting of the soil surface interferes with water intake and seedling emergence.

**Too sandy** (as a restrictive feature). The soil is soft and loose; it is droughty and low in fertility.

**Tuff.** A compacted deposit that is 50 percent or more volcanic ash and dust.

**Valley.** An elongated depressional area cut by stream erosion and the associated water erosion of its side slopes (stream valley). Also used to describe intermontane basins.

**Variant, soil.** A soil having properties sufficiently different from those of other known soils to justify a new series name, but occurring in such a limited geographic area that creation of a new series is not justified.

**Variegation.** Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

**Water-supplying capacity.** The total amount of water available in the soil for plant growth in a normal year from precipitation, from run-on, and from a capillary fringe minus runoff.

**Water table.** The upper level of ground water or that level below which the soil is saturated.

**Water table (perched).** The water table of a saturated layer of soil that is separated from an underlying saturated layer by an unsaturated layer.

**Weathering.** All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

**Wetness** (as a restrictive feature). The soil is wet during the period of use.



## Appendix

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### Criteria Used in Rating Soils for Selected Uses

#### Roadfill

Property	Limits			Restrictive feature
	Good	Fair	Poor	
1. USDA texture.....	---	---	Ice	Permafrost.
2. Depth to bedrock (inches) .....	>60	40-60	<40	Depth to rock.
3. Depth to cemented pan (inches)....	>60	40-60	<40	Cemented pan.
4. Shrink-swell potential <sup>1</sup> .....	Low	Moderate	High, very high	Shrink-swell.
5. AASHTO group index number <sup>1 2 3</sup>	<5	5-8	>8	Low strength.
6. Layer thickness (inches) .....	>60	30-60	<30	Thin layer.
7. Fraction greater than 3 inches (percent by weight) <sup>4</sup> .....	<25	25-50	>50	Large stones.
8. Depth to high water table (feet) ....	>3	1-3	<1	Wetness.
9. Slope (percent) .....	<15	15-25	>25	Slope.

<sup>1</sup> Evaluate the thickest layer between 10 and 60 inches and also the bottom layer. Choose the best rating. When rating is based on bottom layer, verify thickness.

<sup>2</sup> If in kaolinitic family, rate one class better if experience confirms.

<sup>3</sup>  $GIN = (F-35)[.2 + .005(LL-40)] + .01 (F-15)(PI-10)$  where F = percent passing No. 200 sieve. If F is <35 and PI is >11, use only part 2 of equation. Use median values.

<sup>4</sup> Weighted average to 40 inches.

## Shallow Excavations

Property	Limits			Restrictive feature
	Slight	Moderate	Severe	
1. USDA texture .....	---	---	Ice	Permafrost.
2. Depth to bedrock (inches):				
Hard .....	>60	40-60	<40	Depth to rock.
Soft .....	>40	20-40	<20	Depth to rock.
3. Depth to cemented pan (inches):				
Thick .....	>60	40-60	<40	Cemented pan.
Thin .....	>40	20-40	<20	Cemented pan.
4. USDA texture (20 to 60 inches) ...	---	SI <sup>1</sup>	COS, S, FS, VFS, LCOS, LS, LFS, LVFS, G, SG	Cutbanks cave.
5. USDA texture (20 to 60 inches) ...	---	C, SIC	---	Too clayey.
6. Soil order .....	---	---	Vertisols	Cutbanks cave.
7. Bulk density (g/cc) .....	---	>1.8	---	Dense layer.
8. Unified (20 to 60 inches) .....	---	---	OL, OH, PT	Excess humus.
9. Fraction greater than 3 inches (percent by weight) <sup>2</sup> .....	<25	25-50	>50	Large stones.
10. Depth to high water table (feet) ...	---	---	+	Ponding.
	>6	2.5-6	<2.5	Wetness.
11. Flooding .....	None, rare	Common	---	Flooding.
12. Slope (percent) .....	<8	8-15	>15	Slope.
13. Downslope movement .....	---	---	( <sup>3</sup> )	Slippage.

<sup>1</sup> In areas of loess, rating should be *slight*.

<sup>2</sup> Weighted average to 40 inches.

<sup>3</sup> If the soil is susceptible to movement downslope when loaded, excavated, or wet, rate "Severe—slippage."

## Local Roads and Streets

Property	Limits			Restrictive feature
	Slight	Moderate	Severe	
1. USDA texture .....	---	---	Ice	Permafrost.
2. Total subsidence .....	---	---	>12	Subsides.
3. Depth to bedrock (inches):				
Hard .....	>40	20-40	<20	Depth to rock.
Soft .....	>20	<20	---	Depth to rock.
4. Depth to cemented pan (inches):				
Thick .....	>40	20-40	<20	Cemented pan.
Thin .....	>20	<20	---	Cemented pan.
5. Shrink-swell potential <sup>1</sup> .....	Low	Moderate	High, very high	Shrink-swell.
6. AASHTO group index number <sup>1 2 3</sup> .....	<5	5-8	>8	Low strength.
7. Depth to high water table (feet) ...	---	---	+	Ponding.
	>2.5	1.0-2.5	<1.0	Wetness.
8. Slope (percent) .....	<8	8-15	>15	Slope.
9. Flooding .....	None	Rare	Common	Flooding.
10. Potential frost action .....	Low	Moderate	High	Frost action.
11. Fraction greater than 3 inches (percent by weight) <sup>4</sup> .....	<25	25-50	>50	Large stones.
12. Downslope movement .....	---	---	( <sup>5</sup> )	Slippage.
13. Formation of pits .....	---	---	( <sup>6</sup> )	Pitting.
14. Differential settling .....	---	---	( <sup>7</sup> )	Unstable fill.

<sup>1</sup> Thickest layer between 10 and 40 inches.

<sup>2</sup>  $GIN = (F-35)[.2 + .005(LL-40)] + .01(F-15)(PI-10)$  where F = percent passing No. 200 sieve. If F is <35 and PI is >11, use only part 2 of equation. Use median values.

<sup>3</sup> If in kaolinitic family, rate one class better if experience confirms.

<sup>4</sup> Weighted average to 40 inches.

<sup>5</sup> If the soil is susceptible to movement downslope when loaded, excavated, or wet, rate "Severe—slippage."

<sup>6</sup> If the soil is susceptible to the formation of pits caused by the melting of ground ice when the ground cover is removed, rate "Severe—pitting."

<sup>7</sup> If the soil is susceptible to differential settling, rate "Severe—unstable fill."

## Embankments, Dikes, and Levees

Property	Limits			Restrictive feature
	Slight	Moderate	Severe	
1. USDA texture .....	---	---	Ice	Permafrost.
2. Layer thickness (inches).....	>60	30-60	<30	Thin layer.
3. Unified <sup>1</sup> .....	---	---	GW, GP, SW, SP, GW-GM, GP-GM, SW-SM, SP-SM, SM, <sup>2</sup> GM <sup>2</sup>	Seepage.
4. Unified <sup>1</sup> .....	---	GM, <sup>3</sup> CL <sup>4</sup>	ML, <sup>5</sup> SM, <sup>6</sup> SP, <sup>6</sup> CL-ML	Piping.
5. Unified <sup>1</sup> .....	---	---	PT, OL, OH	Excess humus.
6. Unified <sup>1</sup> .....	---	---	MH, CH <sup>7</sup>	Hard to pack.
7. Fraction greater than 3 inches (percent by weight) <sup>8</sup> .....	<15	15-35	>35	Large stones.
8. Depth to high water table (feet) ...	---	---	+	Ponding.
Apparent.....	>4	2-4	<2	Wetness.
Perched .....	>3	1-3	<1	Wetness.
9. Sodium adsorption ratio in the upper 40 inches (great group or phase).....	---	---	>12 (natric, halic, alkali phases)	Excess sodium.
10. Salinity (mmhos/cm) .....	<8	8-16	>16	Excess salt.

<sup>1</sup> Thickest layer between 10 and 60 inches.

<sup>2</sup> Rate *moderate* if more than 20 percent passing No. 200 sieve and *slight* if more than 30 percent passing No. 200 sieve.

<sup>3</sup> Rate *slight* if less than 35 percent passing No. 200 sieve, less than 50 percent passing No. 40 sieve, and less than 65 percent passing No. 10 sieve. The soil must meet all three criteria before it is rated *slight*.

<sup>4</sup> Rate *slight* if PI is greater than 15.

<sup>5</sup> Rate *moderate* if PI is greater than 10.

<sup>6</sup> Rate *moderate* if less than 70 percent passing No. 40 sieve and less than 90 percent passing No. 10 sieve, and rate *slight* if less than 60 percent passing No. 40 sieve and less than 75 percent passing No. 10 sieve.

<sup>7</sup> Rate *moderate* if PI is less than 40.

<sup>8</sup> Weighted average to 40 inches.

## Topsoil

Property	Limits			Restrictive feature
	Good	Fair	Poor	
1. USDA texture .....	---	---	Ice	Permafrost.
2. Depth to bedrock (inches) .....	>40	20-40	<20	Depth to rock.
3. Depth to cemented pan (inches) ..	>40	20-40	<20	Cemented pan.
4. Depth to bulk density greater than 1.8 g/cc (inches) .....	>40	20-40	<20	Area reclaim.
5. USDA texture <sup>1</sup> .....	---	LCOS, LS, LFS, LVFS	COS, S, FS, VFS	Too sandy.
6. USDA texture <sup>1</sup> .....	---	SCL, CL, SICL <sup>2</sup>	SIC, C, SC	Too clayey.
7. USDA texture <sup>1</sup> .....	---	---	FB, HM, SP, MPT, muck, peat, CE	Excess humus.
8. Fraction greater than 3 inches (percent by weight): <sup>3</sup>				
0 to 40 inches .....	<5	5-25	>25	Large stones.
40 to 60 inches .....	<15	15-30	>30	Area reclaim.
9. Coarse fragments (percent): <sup>3</sup>				
0 to 40 inches .....	<5	5-25	>25	Small stones.
40 to 60 inches .....	<25	25-50	>50	Area reclaim.
10. Salinity (mmhos/cm) <sup>1</sup> .....	<4	4-8	>8	Excess salt.
11. Layer thickness (inches) .....	>40	20-40	<20	Thin layer.
12. Depth to high water table (feet) ...	---	---	<1	Wetness.
13. Sodium adsorption ratio in the upper 40 inches (great group or phase) .....	---	---	>12 (halic, natric, alkali phases)	Excess sodium.
14. Soil reaction (pH) <sup>1</sup> .....	---	---	<3.6	Too acid.
15. Slope (percent) .....	<8	8-15	>15	Slope.
16. Carbonates .....	---	---	( <sup>4</sup> )	Excess lime.

<sup>1</sup> Thickest layer between 0 and 40 inches.

<sup>2</sup> If soil contains more than 3 percent organic matter and has less than 35 percent clay, rate *good*.

<sup>3</sup> Sum (100 minus percent passing No. 10 sieve) and fraction greater than 3 inches. Use dominant condition for restrictive feature.

<sup>4</sup> If the amount of carbonate is so high that it restricts the growth of plants, rate "Poor—excess lime."

**Pond Reservoir Areas**

Property	Limits			Restrictive feature
	Slight	Moderate	Severe	
1. USDA texture.....	---	---	Ice	Permafrost.
2. Permeability between 20 and 60 inches (inches/hour).....	<0.6	0.6-2.0	>2.0	Seepage.
3. Depth to bedrock (inches).....	>60	20-60	<20	Depth to rock.
4. Depth to cemented pan (inches)....	>60	20-60	<20	Cemented pan.
5. Slope (percent).....	<3	3-8	>8	Slope.
6. USDA texture (all depths).....	---	---	Marl, gyp	Seepage.
7. Downslope movement.....	---	---	( <sup>1</sup> )	Slippage.
8. Formation of pits.....	---	---	( <sup>2</sup> )	Pitting.

<sup>1</sup> If the soil is susceptible to movement downslope when loaded, excavated, or wet, rate "Severe—slippage."

<sup>2</sup> If the soil is susceptible to the formation of pits caused by the melting of ground ice when the surface cover is removed, rate "Severe—pitting."

## Drainage

Property	Limits	Restrictive feature
1. USDA texture .....	Ice	Permafrost.
2. Depth to high water table (feet) <sup>1</sup> .....	>3 <sup>2</sup> +	Deep to water. Ponding.
3. Permeability in the upper 40 inches (inches/hour) .....	<0.2	Percs slowly.
4. Depth to bedrock (inches) .....	<40	Depth to rock.
5. Depth to cemented pan (inches) .....	<40	Cemented pan.
6. Flooding .....	Common	Flooding.
7. Total subsidence .....	Any entry	Subsides.
8. Fraction greater than 3 inches (percent by weight) <sup>3</sup> .....	>25	Large stones.
9. Potential frost action .....	High	Frost action.
10. Slope (percent) .....	>3	Slope.
11. USDA texture <sup>3</sup> .....	COS, S, FS, VFS, LCOS, LS, LFS, LVFS, SG, G	Cutbanks cave.
12. Salinity (mmhos/cm) (any depth) .....	>8	Excess salt.
13. Sodium adsorption ratio in the upper 40 inches (great group or phase) .....	>12 (natric, halic, alkali phases)	Excess sodium.
14. Sulfidic materials (great group) .....	Sulfaquents, Sulphemists	Excess sulfur.
15. Soil reaction (pH) (any depth) .....	<3.6	Too acid.
16. Downslope movement .....	( <sup>4</sup> )	Slippage.
17. Complex landscape .....	( <sup>5</sup> )	Complex slope.
18. Availability of outlets .....	( <sup>6</sup> )	Poor outlets.

<sup>1</sup> If "Deep to water," disregard other properties.

<sup>2</sup> If irrigated, consider other restrictive features if the water table is between 3 and 5 feet.

<sup>3</sup> Thickest layer between 10 and 60 inches.

<sup>4</sup> If the soil is susceptible to movement downslope when loaded, excavated, or wet, list "Slippage" as a restrictive feature.

<sup>5</sup> If complex and irregular slopes cause difficulty in design, installation, or functioning of the system, list "Complex slope" as a restrictive feature.

<sup>6</sup> If good outlets are difficult to find, list "Poor outlets" as a restrictive feature.

## Irrigation

Property	Limits	Restrictive feature
1. USDA texture .....	Ice	Permafrost.
2. Slope (percent) .....	>3	Slope.
3. Fraction greater than 3 inches (percent by weight) <sup>1</sup> .....	>25	Large stones.
4. Depth to high water table (feet) .....	+ <3 <sup>2</sup>	Ponding. Wetness.
5. Available water capacity (inches/inch) .....	<0.10	Droughty.
6. USDA texture (surface layer) .....	COS, S, FS, VFS, LCOS, LS, LFS, LVFS	Fast intake.
7. USDA texture (surface layer) .....	SIC, C, SC	Slow intake.
8. Wind erodibility group.....	1, 2, 3	Soil blowing.
9. Permeability in the upper 60 inches (inches hour) .....	<0.2	Percs slowly.
10. Depth to bedrock (inches).....	<40	Depth to rock.
11. Depth to cemented pan (inches) .....	<40	Cemented pan.
12. Fragipan (great group).....	All fragi	Rooting depth.
13. Bulk density in the upper 40 inches (g/cc) ..	>1.7	Rooting depth.
14. Erosion factor K (surface layer) .....	>.35	Erodes easily.
15. Flooding.....	Common	Flooding.
16. Sodium adsorption ratio in the upper 40 inches (great group or phase) .....	>12 (natric, halic, alkali phases)	Excess sodium.
17. Salinity in the upper 40 inches (mmhos/cm)	>4	Excess salt.
18. Soil reaction (pH) (any depth) .....	<3.6	Too acid.
19. Complex landscape.....	( <sup>3</sup> )	Complex slope.
20. Formation of pits .....	( <sup>4</sup> )	Pitting.
21. Carbonates .....	( <sup>5</sup> )	Excess lime.

<sup>1</sup> Weighted average to 40 inches.<sup>2</sup> Disregard if depth to water table is below 3 feet during growing season.<sup>3</sup> If complex and irregular slopes cause difficulty in design, installation, or functioning of the system, list "Complex slope" as a restrictive feature.<sup>4</sup> If the soil is susceptible to the formation of pits caused by the melting of ground ice when ground cover is removed, list "Pitting" as a restrictive feature.<sup>5</sup> If the amount of carbonate is so high that it restricts the growth of plants, list "Excess lime" as a restrictive feature.



## Terraces and Diversions

Property	Limits	Restrictive feature
1. USDA texture .....	Ice	Permafrost.
2. Slope (percent) .....	>8	Slope.
3. Fraction greater than 3 inches (percent by weight) <sup>1</sup> .....	>15	Large stones.
4. Depth to bedrock (inches) .....	<40	Depth to rock.
5. Depth to cemented pan (inches) .....	<40	Cemented pan.
6. Erosion factor K (upper 40 inches) .....	>.35	Erodes easily.
7. Depth to high water table (feet) .....	+ <3.0	Ponding. Wetness.
8. Fragipan (great group) .....	All fragi	Rooting depth.
9. USDA texture <sup>2</sup> .....	COS, S, FS, LS, LCOS, SG	Too sandy.
10. Wind erodibility group .....	1, 2, 3	Soil blowing.
11. Permeability (inches/hour) <sup>2</sup> .....	<0.2	Percs slowly.
12. Downslope movement .....	( <sup>3</sup> )	Slippage.
13. Complex landscape .....	( <sup>4</sup> )	Complex slope.
14. Availability of outlets .....	( <sup>5</sup> )	Poor outlets.

<sup>1</sup> Weighted average to 40 inches.

<sup>2</sup> Thickest layer between 10 and 60 inches.

<sup>3</sup> If the soil is susceptible to movement downslope when loaded, excavated, or wet, list "Slippage" as a restrictive feature.

<sup>4</sup> If complex and irregular slopes cause difficulty in design, installation, or functioning of the system, list "Complex slope" as a restrictive feature.

<sup>5</sup> If good outlets are difficult to find, list "Poor outlets" as a restrictive feature.

**Sand**

Property	Limits		Restrictive feature
	Probable source	Improbable source	
1. USDA texture .....	---	Ice	Permafrost.
2. Unified <sup>1</sup> .....	SW, SP, SW-SM, SP-SM	---	---
	GW, GP, GW-GM, GP-GM <sup>2</sup>	---	---
	---	GW, GP, GW-GM, GP-GM <sup>3</sup>	Small stones.
	---	PT	Excess humus.
	---	All other	Excess fines.
3. Layer thickness (inches) ....	>36	<36	Thin layer.
4. Fraction greater than 3 inches (percent by weight) <sup>4</sup> .....	<50	>50	Large stones.

<sup>1</sup> Evaluate the thickest layer between 10 and 60 inches and also the bottom layer. Choose the best rating. When rating is based on bottom layer, verify thickness.

<sup>2</sup> Percent passing No. 4 sieve minus percent passing No. 200 sieve is greater than 25.

<sup>3</sup> Percent passing No. 4 sieve minus percent passing No. 200 sieve is less than 25.

<sup>4</sup> Thickest layer between 10 and 60 inches.

## Gravel

Property	Limits		Restrictive feature
	Probable source	Improbable source	
1. USDA texture .....	---	Ice	Permafrost.
2. Unified <sup>1</sup> .....	GW, GP, GW-GM, GP-GM	---	---
	SW, SP, SW-SM, SP-SM <sup>2</sup>	SW, SP, SW-SM, SP-SM <sup>3</sup>	Too sandy.
	---	PT	Excess humus.
	---	All other	Excess fines.
3. Layer thickness (inches) ....	>36	<36	Thin layer.
4. Fraction greater than 3 inches (percent by weight) <sup>4</sup> .....	<50	>50	Large stones.

<sup>1</sup> Evaluate the thickest layer between 10 and 60 inches and also the bottom layer. Choose the best rating. When rating is based on bottom layer, verify thickness.

<sup>2</sup> 100 minus percent passing No. 4 sieve is greater than 25.

<sup>3</sup> 100 minus percent passing No. 4 sieve is less than 25.

<sup>4</sup> Thickest layer between 10 and 60 inches.

## Daily Cover for Landfill

Property	Limits			Restrictive feature
	Good	Fair	Poor	
1. USDA texture .....	---	---	Ice	Permafrost.
2. Depth to bedrock (inches) .....	>60	40-60	<40	Depth to rock.
3. Depth to cemented pan (inches) ..	>60	40-60	<40	Cemented pan.
4. Unified <sup>1</sup> .....	---	---	SP, SW, SP-SM, SW-SM, GP, GW, GP-GM, GW-GM	Seepage.
5. USDA texture <sup>1 2 3</sup> .....	---	CL, SICL, SC	SIC, C	Too clayey.
6. USDA texture <sup>1</sup> .....	---	LCOS, LS, LFS, VFS	S, FS, COS, SG	Too sandy.
7. Unified <sup>1 2</sup> .....	---	---	OL, OH, CH, MH	Hard to pack.
8. Coarse fragments (percent) <sup>1 4</sup> .....	<25	25-50	>50	Small stones.
9. Fraction greater than 3 inches (percent by weight) <sup>1 4</sup> .....	<25	25-50	>50	Large stones.
10. Slope (percent) .....	<8	8-15	>15	Slope.
11. Depth to high water table (feet) ...	---	---	+	Ponding.
	>3.5	1.5-3.5	<1.5	Wetness.
12. Unified <sup>1</sup> .....	---	---	PT	Excess humus.
13. Layer thickness (inches) .....	>60	40-60	<40	Thin layer.
14. Soil reaction (pH) <sup>1</sup> .....	---	---	<3.6	Too acid.
15. Salinity in the upper 60 inches (mmhos/cm) <sup>3</sup> .....	---	---	>16	Excess salt.
16. Sodium adsorption ratio (great group) <sup>1 3</sup> .....	---	---	>12 (halic, natric, alkali phases)	Excess sodium.
17. Carbonates .....	---	---	( <sup>5</sup> )	Excess lime.

<sup>1</sup> Thickest layer between 10 and 60 inches.

<sup>2</sup> If in kaolinitic family, rate one class better if experience confirms.

<sup>3</sup> Disregard in all Aridisols except Salorthids and Aquic intergrades and all Torri great groups of Entisols except Aquic.

<sup>4</sup> Sum (100 minus percent passing No. 10 sieve) and fraction greater than 3 inches. Use dominant condition for restrictive feature.

<sup>5</sup> If the amount of carbonate is so high that it restricts the growth of plants, rate "Poor—excess lime."

### Guide for Estimating the Hazard of Erosion on Bare Soil in Nevada

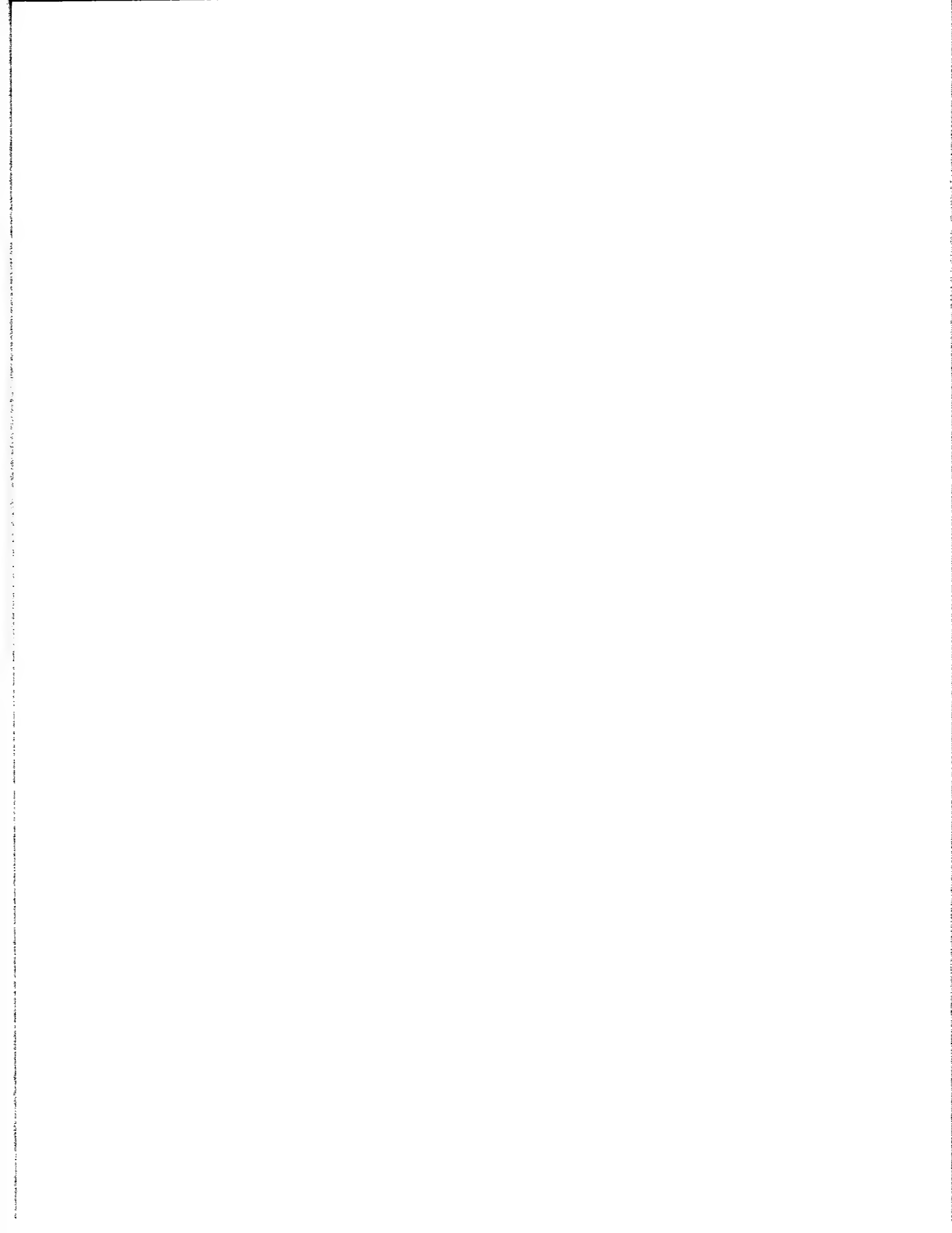
"K" means erosion factor K; "S" means percent slope; "I" means wind erodibility index; "C" means climatic factor.

	Water (K x S)	Wind (I x C)
Slight.....	<4	<60
Moderate .....	4-8	60-100
High.....	>8	>100

## Range Seeding

Property	Limits			Restrictive feature
	Good	Fair	Poor	
Moisture regime .....	Aquic, xeric, ustic, and xeric and ustic bordering on aridic or torric.	Aridic and torric bordering on aquic, xeric, or ustic.	Aridic and torric.	Too arid.
Effective moisture <sup>1</sup> .....	>10 in. (25 cm)	7-10 in. (17.5-25 cm)	<7 in. (17.5 cm)	Too arid.
Available water capacity .....	Surface 10 in. (27 cm) >1.25 in. (3.2 cm). Soil profile > 4 in. (10.2 cm).	Surface 10 in. (25 cm) 0.75-1.25 in. (1.9-3.2 cm). Soil profile 2.5-4 in. (6.4-10.2 cm).	Surface 10 in. (25 cm) <0.75 in. (1.9 cm). Soil profile < 2-5 in. (6.4 cm).	Droughty.
Texture surface 7 in. (17.5 cm) .....	LVFS, COSL, SL, FSL, VFSL, L SIL, SCL, and CL SICL with <35% C.	VFS, LFS, SC, SIC, C and CL and SICL with >35% C.	LS, LCOS, FS, COS.	Too sandy. Too clayey.
Rock fragments in surface 7 in. (17.5 cm) .....	GR <35%; CB <15%; ST <3%. Total rock fragments <35%.	GR <35%; CB 15-35%; ST 3-15%. Total rock fragments <35%.	GR >35%; CB 35%; ST >15%. Total rock fragments >35%.	Small stones. Large stones.
Depth to abrupt A-B texture boundary <sup>2</sup> .....	>10 in. (25 cm)	>10 in. (25 cm)	<10 in. (25 cm)	Rooting depth.
Depth to bedrock or hardpan .....	>20 in. (50 cm)	10-20 in. (25-50 cm)	<10 in. (25 cm)	Depth to rock/pan.
Electrical conductivity-saturation extract-25°C .....	<2 mmhos/cm (0.2 s/m) in upper 20 in. (50 cm).	2-4 mmhos/cm (0.2-0.4 s/m) in upper 10 in. (25 cm) and 4-8 mmhos/cm (0.4-0.8 s/m) in 10-20 (25-50 cm).	>4 mmhos/cm (0.4 s/m) in upper 10 in. (25 cm) and/or >8 mmhos/cm (0.8 s/m) in 10-20 in. (25-50 cm).	Excess salt.
Sodium adsorption ratio .....	<8 in upper 20 in. (50 cm).	8-13 in upper 10 in. (25 cm) and <20 in 10-20 in. (25-50 cm).	>13 in upper 10 in. (25 cm) and/or >20 in 10-20 in. (25-50 cm).	Excess sodium.
K x percent slope <sup>3</sup> .....	<4 <sup>4</sup> ; <6 <sup>5</sup>	4-6 <sup>4</sup> ; 6-8 <sup>5</sup>	>6 <sup>4</sup> ; >8 <sup>5</sup>	Erodes easily.
I x C <sup>6</sup> .....	<60	<60	>60	Soil blowing.
Soil surface morphological types <sup>7</sup> ..	Types I and II >60%; Type IV <5%; or with mollic epipedon <sup>8</sup>	Types I and II 20-60%; Type IV <10% <sup>8</sup>	Type III <60%; Type IV >10% <sup>8</sup>	Too crusty.

<sup>1</sup> Moisture from precipitation, run-on, and ground water budgeted to actual evapotranspiration.<sup>2</sup> Rate Vertisols and Vertic subgroups as poor.<sup>3</sup> Sheet and rill erosion hazard (bare soil).<sup>4</sup> For ustic bordering on aridic or torric, and aridic or torric bordering on ustic moisture regimes.<sup>5</sup> For xeric, xeric bordering on aridic or torric, and aridic or torric bordering on xeric moisture regimes.<sup>6</sup> Wind erosion hazard (bare soil).<sup>7</sup> See: (1) Final Report. Properties, Occurrence and Management of Soils with Vesicular Surface Horizons, 1977. Contract No. 52500-CT 5(N). USDI-BLM and UNR-Ag. Exp. Sin. Eckert, Peterson, Wood, and Blackburn; and (2) Final Report. Properties, Occurrence and Management of Soils with Vesicular Surface Horizons—Effects of Trampling on Seeding Emergence. 1979. Contract No. YA 512-CT 7-14. USDI-BLM and UNR-Ag. Exp. Sin. Stephens, Eckert, and Peterson.<sup>8</sup> Soils without crusting morphology are to be included in Types I and II for rating.



## Tables

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TABLE 1.--TEMPERATURE AND PRECIPITATION

	Temperature						Precipitation					
Month				2 years in 10 will have--		Average		2 years in 10 will have--		Average		
	Average	Average	Average	Maximum	Minimum	number of	Average	Less	More	number of	Average	
	daily	daily		temperature	temperature	growing		than--	than--	days with	snowfall	
	maximum	minimum		higher	lower	degree				0.10 inch		
				than--	than--	days*				or more		
	° F	° F	° F	° F	° F	Units	In	In	In		In	
Recorded in the period 1951-78 at Austin												
January----	41.0	19.0	30.0	61	-8	10	1.02	0.45	1.50	4	12.1	
February----	43.9	21.8	32.9	63	0	40	1.17	.47	1.75	5	12.6	
March-----	47.8	23.8	35.8	69	3	67	1.33	.41	2.06	4	13.6	
April-----	54.8	29.0	41.9	77	12	161	1.68	.42	2.67	5	17.5	
May-----	65.6	37.5	51.6	87	19	379	1.36	.38	2.15	4	6.0	
June-----	76.9	45.6	61.0	95	29	630	1.35	.36	2.15	3	.5	
July-----	87.3	53.9	70.6	98	40	949	.62	.12	1.00	2	.0	
August-----	84.9	52.2	68.6	96	36	887	.68	.06	1.14	2	.0	
September--	76.2	44.7	60.5	92	25	615	.70	.05	1.19	2	.2	
October-----	64.8	36.0	50.4	84	15	348	.87	.08	1.43	2	3.6	
November----	50.3	26.7	38.6	70	5	76	.94	.39	1.40	3	5.9	
December----	41.7	20.4	31.1	59	-4	24	1.18	.28	1.89	5	12.6	
Yearly:												
Average----	61.2	34.2	47.8	---	---	---	---	---	---	---	---	
Extreme----	---	---	---	98	-9	---	---	---	---	---	---	
Total-----	---	---	---	---	---	4,186	12.90	10.31	16.53	41	84.6	
Recorded in the period 1951-78 at Battle Mountain												
January----	41.3	16.2	28.7	62	-16	36	0.58	0.23	0.88	3	4.9	
February----	47.6	21.7	34.7	68	-2	54	.56	.17	.88	2	4.2	
March-----	53.4	24.3	38.9	76	3	86	.61	.15	.98	3	3.6	
April-----	61.8	29.4	45.6	83	12	198	.79	.21	1.25	3	3.1	
May-----	72.3	38.0	55.2	94	19	477	.77	.12	1.27	3	.4	
June-----	82.1	45.6	63.8	99	29	714	1.04	.22	1.68	3	.0	
July-----	93.0	51.7	72.4	104	39	1,004	.26	.04	.43	1	.0	
August-----	90.4	48.2	69.3	103	31	908	.34	---	.62	1	.0	
September--	81.0	39.1	60.1	97	21	603	.47	---	.80	1	.0	
October-----	68.5	29.7	49.2	87	12	295	.57	---	.99	2	.2	
November----	52.2	22.0	37.2	73	0	62	.57	.20	.87	2	1.9	
December----	41.8	15.9	28.9	61	-14	22	.77	.26	1.19	3	6.5	
Yearly:												
Average----	65.5	31.8	48.7	---	---	---	---	---	---	---	---	
Extreme----	---	---	---	104	-19	---	---	---	---	---	---	
Total-----	---	---	---	---	---	4,459	7.33	5.34	9.17	27	24.8	

See footnote at end of table.

TABLE 1.--TEMPERATURE AND PRECIPITATION--Continued

Month	Temperature						Precipitation									
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have--		Average number of growing degree days*	Average	2 years in 10 will have--		Average number of days with 0.10 inch or more	Average snowfall					
				Maximum temperature higher than--	Minimum temperature lower than--			Less than--	More than--							
				° F	° F			° F	° F			Units	In	In	In	In
Recorded in the period 1965-78 at Central Field Laboratory																
January----	42.6	13.4	28.0	61	-17	0	0.49	0.18	0.74	1	5.9					
February---	46.9	17.9	32.5	65	-10	17	.49	.18	.75	1	5.8					
March-----	52.5	21.2	36.9	74	-7	68	.49	.10	.78	1	3.8					
April-----	56.7	24.0	40.4	77	5	109	.71	.23	1.09	2	7.6					
May-----	70.3	32.1	51.4	89	14	360	.61	.18	.95	2	2.2					
June-----	78.7	40.3	59.4	94	22	582	1.13	.05	1.93	3	.1					
July-----	88.5	45.9	67.2	97	32	843	.53	.11	.85	1	.0					
August-----	86.4	43.2	64.8	96	28	769	.84	.18	1.34	2	.0					
September--	77.6	34.7	56.2	91	15	486	.56	.01	.93	2	.0					
October----	65.5	24.9	45.2	81	5	179	.57	---	1.00	1	.8					
November---	52.5	20.1	36.3	72	-1	22	.47	.24	.67	2	2.9					
December---	40.2	11.1	26.0	59	-19	12	.47	.20	.69	2	6.3					
Yearly:																
Average--	63.2	27.4	45.4	---	---	---	---	---	---	---	---					
Extreme--	---	---	---	97	-23	---	---	---	---	---	---					
Total----	---	---	---	---	---	3,447	7.36	6.26	8.61	20	35.4					

\* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

Probability	Temperature		
	24° F or lower	28° F or lower	32° F or lower
Recorded in the period 1951-78 at Austin			
Last freezing temperature in spring:			
1 year in 10 later than--	May 21	June 8	June 19
2 years in 10 later than--	May 14	June 2	June 13
5 years in 10 later than--	May 3	May 21	June 3
First freezing temperature in fall:			
1 year in 10 earlier than--	Sept. 27	Sept. 27	Sept. 5
2 years in 10 earlier than--	Oct. 4	Sept. 23	Sept. 11
5 years in 10 earlier than--	Oct. 18	Oct. 4	Sept. 23
Recorded in the period 1951-78 at Battle Mountain			
Last freezing temperature in spring:			
1 year in 10 later than--	May 18	June 4	June 21
2 years in 10 later than--	May 13	May 28	June 14
5 years in 10 later than--	May 3	May 15	May 31
First freezing temperature in fall:			
1 year in 10 earlier than--	Sept. 16	Sept. 3	Aug. 26
2 years in 10 earlier than--	Sept. 21	Sept. 9	Aug. 31
5 years in 10 earlier than--	Oct. 1	Sept. 20	Sept. 11

TABLE 2.--FREEZE DATES IN SPRING AND FALL--Continued

Probability	Temperature		
	24° F or lower	28° F or lower	32° F or lower
Recorded in the period 1965-78 at Central Field Laboratory			
Last freezing temperature in spring:			
1 year in 10 later than--	June 19	June 29	June 3
2 years in 10 later than--	June 11	June 22	June 27
5 years in 10 later than--	May 27	June 10	June 17
First freezing temperature in fall:			
1 year in 10 earlier than--	Aug. 31	Aug. 22	July 16
2 years in 10 earlier than--	Sept. 8	Aug. 29	July 28
5 years in 10 earlier than--	Sept. 23	Sept. 11	Aug. 20

TABLE 3.--GROWING SEASON

Probability	Daily minimum temperature		
	Higher than 24° F	Higher than 28° F	Higher than 32° F
	<u>Days</u>	<u>Days</u>	<u>Days</u>
Recorded in the period 1951-78 at Austin			
9 years in 10	138	112	88
8 years in 10	148	120	96
5 years in 10	168	136	111
2 years in 10	188	151	127
1 year in 10	198	159	135
Recorded in the period 1951-78 at Battle Mountain			
9 years in 10	129	99	73
8 years in 10	137	109	83
5 years in 10	151	127	103
2 years in 10	165	146	122
1 year in 10	173	155	133
Recorded in the period 1965-78 at Central Field Laboratory			
9 years in 10	83	60	17
8 years in 10	95	71	33
5 years in 10	118	92	64
2 years in 10	141	113	95
1 year in 10	153	124	111

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
120	Akerue-Simpark-Robson association-----	12,660	0.8
121	Akerue-Simpark-Punchbowl association-----	7,920	0.5
141	Unsel-Wardenot-Belted association-----	8,275	0.5
142	Unsel-Caphor-Chedehap association-----	3,225	0.2
150	Chedehap-Enko-Ricert association-----	6,130	0.4
160	Batan association-----	1,800	0.1
161	Batan silt loam-----	1,470	0.1
162	Batan-Kelk association-----	4,485	0.3
168	Batan-Bubus-Ocala association-----	7,765	0.5
169	Batan-Ocala association-----	1,525	0.1
170	Beoska-Orovada association-----	3,270	0.2
171	Beoska silt loam, 2 to 8 percent slopes-----	4,255	0.3
172	Beoska-Tenabo complex-----	8,770	0.6
173	Beoska-Allor association-----	4,320	0.3
174	Beoska-Chiara association-----	1,165	0.1
175	Beoska-Whirlo-Misad association-----	965	0.1
177	Beoska-Dewar-Orovada association-----	4,560	0.3
180	Needle Peak-Batan-Yobe association-----	7,205	0.5
190	Wardenot-Sundown association-----	2,395	0.2
191	Wardenot-Laxal association-----	2,115	0.1
200	Izo-Misad association-----	11,765	0.8
201	Izo-Bubus association-----	1,545	0.1
210	Laxal association-----	20,480	1.3
211	Laxal gravelly fine sandy loam, occasionally flooded, 0 to 2 percent slopes-----	2,040	0.1
212	Laxal-Tomel association-----	3,040	0.2
220	Blackhawk very fine sandy loam, 2 to 8 percent slopes-----	1,335	0.1
221	Blackhawk-Tenabo-Desatoya Variant association-----	1,295	0.1
231	Broyles very fine sandy loam, 2 to 4 percent slopes-----	1,125	0.1
235	Broyles-Creemon association-----	1,765	0.1
236	Broyles association-----	2,860	0.2
237	Broyles-Beoska-Orovada association-----	7,935	0.5
239	Broyles-Tessfive-Perlro association-----	2,790	0.2
249	Bubus association-----	795	0.1
260	Umberland-Wendane association-----	5,530	0.4
261	Umberland-Wendane-Ocala association-----	3,790	0.2
262	Umberland silt loam, frequently flooded, 0 to 2 percent slopes-----	545	*
270	Tomel-Laxal association-----	380	*
280	Chiara-Filiran association-----	5,770	0.4
284	Chiara-Dewar association-----	1,565	0.1
290	Creemon silt loam, 0 to 2 percent slopes-----	3,005	0.2
291	Creemon-Wholan association-----	12,460	0.8
295	Creemon-Cren association-----	4,150	0.3
296	Creemon-Hessing association-----	19,210	1.2
297	Creemon-Rasille-Tulase association-----	2,840	0.2
298	Creemon-Misad association-----	2,945	0.2
301	Cren-Ocala-Playas association-----	2,785	0.2
310	Yobe-Kawich-Playas association-----	1,810	0.1
320	Newpass-Jung association-----	16,380	1.1
321	Newpass-Old Camp association-----	16,625	1.1
360	Eastwell-Blackhawk-Pineval association-----	3,785	0.2
404	Glean-Gando association-----	890	0.1
441	Gund-Umberland association-----	4,265	0.3
442	Gund-Bubus-Wendane association-----	3,560	0.2
443	Gund-Batan association-----	2,165	0.1
444	Gund association-----	2,845	0.2
461	Hapgood-Packer-Layview association-----	15,200	1.0
463	Hapgood-Packer-Rubble land association-----	1,245	0.1
465	Hapgood-Halacan-Hatur association-----	3,840	0.2
491	Enko-Orovada association, gently sloping-----	19,035	1.2
492	Enko-Glyphs association-----	2,790	0.2
493	Enko-Orovada association, nearly level-----	1,100	0.1
512	Hessing-Relley association-----	520	*
560	Jesse Camp silt loam-----	945	0.1

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
621	Loncan-Gando-Glean association-----	1,485	0.1
632	McConnel-Orovada-Misad association-----	7,285	0.5
633	McConnel-Rasille-Wholan association-----	42,315	2.7
635	McConnel-Rasille association-----	3,620	0.2
636	McConnel-Defler-Rasille association-----	2,325	0.1
637	McConnel-Orovada association-----	2,045	0.1
638	McConnel-Wholan association-----	4,220	0.3
670	Filiran-Pineval-Kingingham association-----	4,070	0.3
674	Filiran-Bufferan association-----	4,505	0.3
675	Filiran-Bufferan-Orovada association-----	3,610	0.2
680	Skullwak-Umberland-Wendane association-----	1,785	0.1
683	Ocala-Sonoma-Paranat association-----	8,880	0.6
700	Orovada-Rasille-Wholan association-----	28,985	1.9
701	Orovada fine sandy loam, 2 to 4 percent slopes-----	1,975	0.1
702	Orovada-Creemon association-----	1,305	0.1
703	Orovada fine sandy loam, 0 to 2 percent slopes-----	885	0.1
704	Orovada-McConnel association-----	2,965	0.2
705	Orovada-Valmy association-----	2,110	0.1
740	Playas-----	14,655	0.9
751	Poorcal-Lopwash association-----	1,410	0.1
811	Ravenswood-Itca-Walti association-----	1,790	0.1
812	Ravenswood-Shagnasty-Walti association-----	4,245	0.3
850	Relley silt loam, 0 to 2 percent slopes-----	995	0.1
854	Relley silt loam, frequently flooded, 0 to 2 percent slopes-----	2,530	0.2
910	Rutab loam, 0 to 2 percent slopes-----	2,210	0.1
931	Shagnasty-Roca-Rock outcrop association-----	15,125	1.0
932	Shagnasty-Softscrabble association-----	9,045	0.6
942	Shipley silt loam, occasionally flooded, 0 to 2 percent slopes-----	800	0.1
950	Silverado sandy loam, 0 to 2 percent slopes-----	1,325	0.1
990	Sonoma-Wendane association-----	3,980	0.3
998	Sonoma-Paranat association-----	8,430	0.5
999	Sonoma-Wendane-Paranat association-----	4,420	0.3
1011	Stampede-Handy-Caniwe association-----	1,460	0.1
1041	Tenabo-Orovada-Bufferan association-----	4,775	0.3
1042	Tenabo-Ricert-Desatoya association-----	2,045	0.1
1092	Tulase-Bubus-McConnel association-----	2,900	0.2
1131	Fortank gravelly loam, 4 to 8 percent slopes-----	785	0.1
1140	Wendane silt loam, frequently flooded-----	10,726	0.7
1141	Wendane-Umberland association-----	4,070	0.3
1142	Wendane-Gund association-----	10,900	0.7
1143	Wendane silt loam, occasionally flooded-----	2,020	0.1
1145	Wendane-Playas association-----	1,810	0.1
1146	Wendane-Sonoma-Valmy association-----	9,115	0.6
1148	Wendane-Bubus association-----	6,090	0.4
1169	Whirlo-Broyles association-----	395	*
1173	Wholan silt loam, alkaline-----	1,420	0.1
1177	Wholan-Rasille association, alkaline-----	3,125	0.2
1178	Wholan-Rasille association, nonalkaline-----	17,740	1.1
1281	Ricert-Whirlo-Pineval association-----	2,110	0.1
1282	Ricert-Broyles association-----	7,595	0.5
1284	Ricert-Zineb-Pineval association-----	6,080	0.4
1285	Ricert-Bubus-Broyles association-----	1,480	0.1
1286	Ricert-Tenabo-Broyles association-----	3,480	0.2
1287	Ricert-Orovada-Broyles association-----	8,385	0.5
1288	Ricert-Orovada-Tenabo association-----	16,150	1.0
1289	Ricert-Blackhawk-Orovada association-----	6,140	0.4
1371	Chad-Gando-Softscrabble association-----	2,530	0.2
1450	Atlow-Stingdorn association-----	1,480	0.1
1600	Dumps and pits-----	640	*
1670	Wieland-Allor association-----	8,915	0.6
1680	Zineb gravelly loam, 2 to 8 percent slopes-----	2,040	0.1
1681	Zineb-Chiara-Wieland association-----	3,015	0.2
1682	Zineb-Orovada association-----	8,425	0.5

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
2003	Unius-Orovada association-----	5,640	0.4
2010	Glyphs-Silverado association-----	2,170	0.1
2011	Glyphs-Muni association-----	10,845	0.7
2012	Glyphs-Muni-Orovada association-----	12,410	0.8
2015	Glyphs-Enko association-----	5,090	0.3
2021	Rotinom-Wholan association-----	9,460	0.6
2022	Rotinom-Orovada association-----	5,260	0.3
2031	Muni-Orovada-Unius association-----	38,090	2.5
2060	Oxcorel-Beoska-Whirlo association-----	6,180	0.4
2061	Oxcorel-Zaidy-Grassval association-----	11,485	0.7
2063	Oxcorel-Pineval association-----	4,105	0.3
2069	Oxcorel-Wieland-Spasprey association-----	4,515	0.3
2081	Fenster-Jesse Camp association-----	275	*
2088	Punchbowl-Jung-Teguro association-----	2,570	0.2
2089	Punchbowl-Jung-Locane association-----	11,490	0.7
2090	Punchbowl gravelly loam, 4 to 15 percent slopes-----	2,050	0.1
2091	Punchbowl-Teguro-Sumine association-----	10,480	0.7
2092	Punchbowl-Belate-Reluctan association-----	2,125	0.1
2093	Punchbowl-Rock outcrop association-----	9,520	0.6
2094	Punchbowl-Simpark-Akerue association-----	13,220	0.9
2095	Punchbowl-Robson-Rock outcrop association-----	2,775	0.2
2096	Punchbowl-Locane-Nobuck association-----	9,525	0.6
2097	Punchbowl-Itca association-----	5,725	0.4
2099	Punchbowl-Roca-Rock outcrop association-----	890	0.1
2100	Grassval-Grina-Unsel Variant association-----	1,685	0.1
2101	Grassval-Oxcorel association-----	12,020	0.8
2102	Grassval-Wieland association-----	1,120	0.1
2104	Grassval-Punchbowl association-----	8,025	0.5
2105	Grassval-Glyphs-Muni association-----	8,940	0.6
2110	Isolde-Davey association-----	625	*
2540	Buffaran-Wieland association-----	5,075	0.3
2541	Buffaran-Zoesta association-----	2,030	0.1
2542	Buffaran-Chiara association-----	20,795	1.3
2543	Buffaran-Spasprey-Allor association-----	17,795	1.1
2545	Buffaran-Pineval association-----	1,250	0.1
2546	Buffaran-Spasprey-Locane association-----	3,055	0.2
2547	Buffaran-Desatoya association-----	4,710	0.3
2548	Buffaran-Tenabo-Pineval association-----	5,495	0.4
2554	Laped-Hooplite-Osoll association-----	5,730	0.4
2555	Laped-Colbar association-----	4,575	0.3
2570	Colbar-Atlow-Burrita association-----	3,565	0.2
2603	Grina-Genaw association-----	1,360	0.1
2640	Rasille-Kelk association-----	885	0.1
2672	Zoesta Variant-Jung-Trunk association-----	3,035	0.2
2681	Tessfive-Puett-Grina association-----	4,735	0.3
2683	Tessfive-Genaw-Orovada association-----	4,230	0.3
2684	Tessfive-Perlor-Orovada association-----	3,700	0.2
2690	Itca Variant-Reluctan-Handy association-----	2,390	0.2
2730	Pula-Spike-Buffaran association-----	3,840	0.2
2731	Pula-Spike association-----	2,505	0.2
2740	Spike-Desatoya Variant-Grassval association-----	5,745	0.4
2771	Kram-Hopeka-Rock outcrop association-----	1,215	0.1
2780	Desatoya-Tenabo-Pineval association-----	2,045	0.1
2781	Desatoya-Orovada association-----	9,325	0.6
2782	Desatoya-Pineval-Grassval association-----	7,460	0.5
2783	Desatoya-Spike association-----	3,290	0.2
2791	Old Camp-Colbar-Rock outcrop association-----	4,015	0.3
2792	Old Camp-Allor-Puett association-----	3,840	0.2
2793	Old Camp-Laped association-----	2,035	0.1
2797	Old Camp-Colbar association-----	15,855	1.0
2798	Old Camp-Atlow-Osoll association-----	1,670	0.1
3001	Barrier-Kobeh association-----	4,940	0.3
3011	Defler-Orovada association-----	2,250	0.1

See footnote at end of table.



TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
3050	Novacan cobbly loam, 2 to 8 percent slopes-----	2,635	0.2
3071	Allor-Wieland association-----	14,650	0.9
3072	Allor-Orovada association, moderately sloping-----	11,585	0.7
3073	Allor-Kelk association-----	2,255	0.1
3074	Allor-Orovada association, nearly level-----	2,190	0.1
3080	Zaidy-Ricert association-----	3,450	0.2
3081	Zaidy-Allor association-----	5,435	0.3
3091	Packer-Newlands association-----	1,350	0.1
3092	Packer-Hapgood-Rock outcrop association-----	2,040	0.1
3093	Packer-Layview-Hapgood association-----	7,810	0.5
3094	Packer-Hapgood-Torro association-----	10,290	0.7
3101	Hackwood-Newlands-Hapgood association-----	1,025	0.1
3111	Ninemile-Zoesta-Itca association-----	3,515	0.2
3120	Walti-Softscrabble-Chad association-----	3,265	0.2
3121	Walti-Softscrabble-Bucan association-----	4,320	0.3
3122	Walti-Sumine-Softscrabble association-----	10,005	0.6
3123	Walti-Softscrabble-Itca association-----	5,325	0.3
3125	Walti-Softscrabble-Robson association-----	800	0.1
3130	Itca-Clanalpine-Reluctan association-----	9,435	0.6
3131	Itca-Ninemile-Rock outcrop association-----	3,380	0.2
3132	Itca-Softscrabble-Cleavage association-----	2,675	0.2
3134	Itca-Clanalpine-Torro association-----	18,670	1.2
3135	Itca-Clanalpine-Rock outcrop association-----	4,295	0.3
3136	Itca-Roca-Reluctan association-----	21,745	1.4
3137	Itca-Reluctan-Walti association-----	6,625	0.4
3140	Sodhouse-Tenabo-Desatoya Variant association-----	1,940	0.1
3151	Robson-Ninemile-Ravenswood association-----	4,755	0.3
3153	Robson-Locane-Softscrabble association-----	4,970	0.3
3154	Robson-Locane-Rock outcrop association-----	3,555	0.2
3155	Robson-Itca-Softscrabble association-----	3,530	0.2
3170	Teguro-Rubble land-Punchbowl association-----	2,275	0.1
3181	Newlands-Packer-Hapgood association, moderately steep-----	6,495	0.4
3182	Newlands-Packer-Hapgood association, strongly sloping-----	3,330	0.2
3190	Softscrabble-Clanalpine-Walti association-----	12,080	0.8
3192	Softscrabble-Walti-Cleavage association-----	2,315	0.1
3200	Dewar gravelly loam, 2 to 8 percent slopes-----	5,880	0.4
3210	Typic Argixerolls-Torripsammentic Haploxerolls-Glean association-----	1,200	0.1
3231	Stingdorn-Hooplite association-----	3,595	0.2
3251	Caphor-Tenabo-Spasprey association-----	2,130	0.1
3252	Caphor-Batan-Unsel association-----	9,280	0.6
3253	Caphor association-----	5,665	0.4
3270	Koyen fine sandy loam, 2 to 4 percent slopes-----	340	*
3310	Spasprey-Allor association-----	12,205	0.8
3312	Spasprey-Bufferan-Orovada association-----	3,665	0.2
3314	Spasprey-Allor-Orovada association-----	5,100	0.3
3341	Halacan-Hatur-Rock outcrop association-----	1,425	0.1
3342	Halacan-Hapgood-Granzan association-----	4,860	0.3
3411	Zoesta-Robson-Softscrabble association-----	12,560	0.8
3415	Zoesta-Handy association-----	2,710	0.2
3417	Zoesta-Roca-Softscrabble association-----	1,830	0.1
3421	Belate-Softscrabble-Torro association-----	14,860	1.0
3422	Belate-Robson-Torro association-----	2,450	0.2
3423	Belate-Cleavage-Softscrabble association-----	9,345	0.6
3450	Reluctan-Robson-Cleavage association-----	2,885	0.2
3453	Reluctan-Locane-Itca association-----	15,785	1.0
3455	Reluctan-Roca-Colbar association-----	1,820	0.1
3457	Reluctan-Clanalpine-Roca association-----	2,440	0.2
3461	Torro-Rubble land-Cleavage association-----	1,535	0.1
3462	Torro-Reluctan-Cleavage association-----	2,420	0.2
3463	Torro-Clanalpine-Itca association-----	1,605	0.1
3464	Torro-Itca-Softscrabble association-----	7,420	0.5
3465	Torro-Clanalpine-Softscrabble association-----	4,195	0.3
3562	Locane-Coztur-Punchbowl association-----	14,370	0.9

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
3563	Locane-Muni association-----	4,565	0.3
3625	Minat-Coztur-Belate association-----	1,585	0.1
3690	Izod-Koynik-Rock outcrop association-----	1,400	0.1
3740	Kelk silt loam, saline-----	1,480	0.1
3741	Kelk-Settlemyer association-----	3,540	0.2
3742	Kelk-Ocala association-----	4,450	0.3
3840	Jung-Newpass association-----	14,670	0.9
3841	Jung-Itca-Roca association-----	14,260	0.9
3842	Jung-Hooplite association-----	7,460	0.5
3843	Jung-Newpass-Teguro association-----	4,115	0.3
3845	Jung-Stingdorn-Atlow association-----	3,605	0.2
3846	Jung-Atlow-McVegas association-----	5,935	0.4
3847	Jung-Old Camp-Clanlaine association-----	265	*
3848	Jung-McVegas-Enko association-----	2,945	0.2
3851	Decram-Hapgood association-----	4,710	0.3
3852	Decram-Hapgood-Chad association-----	3,605	0.2
3861	Duco-Itca-Roca association-----	4,930	0.3
3863	Duco-Clanlaine-Jung association-----	1,080	0.1
3881	Layview-Packer-Hapgood association-----	2,095	0.1
3891	Labshaft-Hapgood-Rock outcrop association-----	1,790	0.1
3950	Hooplite-Jung-Izod association-----	3,000	0.2
3951	Hooplite-Old Camp-Puett association-----	1,345	0.1
3952	Hooplite-Stingdorn association-----	5,650	0.4
3960	Pineval gravelly loam, 2 to 4 percent slopes-----	1,130	0.1
3961	Pineval-Orovada-Beoska association-----	4,420	0.3
3964	Pineval-Orovada association-----	17,190	1.1
3990	Settlemyer fine sandy loam, drained, 0 to 2 percent slopes-----	975	0.1
3991	Settlemyer-Pineval association-----	3,340	0.2
3992	Settlemyer complex-----	1,185	0.1
4041	Hymas-Xine-Attella association-----	9,255	0.6
4070	Genaw-Wieland-Grina association-----	2,125	0.1
4072	Genaw-Orovada-Puett association-----	3,155	0.2
4073	Genaw-Broyles-Perlor association-----	3,060	0.2
4140	Welch loam, drained, 2 to 8 percent slopes-----	1,825	0.1
	Total-----	1,554,671	100.0

\* Less than 0.1 percent.

TABLE 5.--ENGINEERING INDEX PROPERTIES

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
120*:											
Akerue-----	0-3	Very stony loam	SM-SC	A-4	30-40	75-80	55-65	50-60	40-50	25-30	5-10
	3-15	Very cobbly clay loam, very cobbly clay.	GC, SC, CL	A-7	40-55	60-85	50-80	45-65	35-55	40-50	15-25
	15-21	Indurated-----	---	---	---	---	---	---	---	---	---
	21-25	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Simpark-----	0-13	Very stony loam	SM-SC	A-2, A-4	25-40	65-80	50-70	45-60	25-40	20-25	5-10
	13-18	Very cobbly loam, very gravelly loam.	GC, SC	A-2, A-6	10-40	60-75	30-65	25-55	20-45	25-35	10-15
	18-22	Indurated-----	---	---	---	---	---	---	---	---	---
	22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Robson-----	0-2	Very cobbly loam	GM-GC, GC, SM-SC, SC	A-2	30-50	55-75	50-65	30-50	25-35	25-35	5-15
	2-5	Very cobbly clay loam.	GC	A-7	30-45	55-75	50-60	40-60	35-50	40-45	15-20
	5-15	Very cobbly clay, extremely cobbly clay.	GC, GM	A-7	50-80	60-70	50-65	40-55	35-50	45-55	20-25
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
121*:											
Akerue-----	0-3	Very cobbly loam	SM-SC	A-4	30-40	75-80	55-65	50-60	40-50	25-30	5-10
	3-15	Very cobbly clay loam, very cobbly clay.	GC, SC, CL	A-7	40-55	60-85	50-80	45-65	35-55	40-50	15-25
	15-21	Indurated-----	---	---	---	---	---	---	---	---	---
	21-25	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Simpark-----	0-13	Very cobbly loam	SM-SC	A-2, A-4	40-55	65-80	50-70	45-60	25-40	20-25	5-10
	13-18	Very cobbly loam, very gravelly loam.	GC, SC	A-2, A-6	10-40	60-75	30-65	25-55	20-45	25-35	10-15
	18-22	Indurated-----	---	---	---	---	---	---	---	---	---
	22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Punchbowl-----	0-3	Gravelly loam----	SM	A-2, A-4	5-10	65-85	60-75	45-60	30-45	15-25	NP-5
	3-7	Loam, gravelly loam.	SC, GC, CL	A-6	0-5	70-100	65-95	60-85	45-55	25-35	10-15
	7-11	Gravelly clay loam, gravelly sandy clay loam.	GC	A-6, A-7	0-5	55-65	50-60	45-55	35-45	35-45	15-20
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct						
141*: Unsel-----	0-8	Gravelly fine sandy loam.	SM-SC	A-2	0	75-85	55-75	40-60	25-35	25-30	5-10
	8-18	Gravelly clay loam, gravelly sandy clay loam.	SC	A-6	0	75-85	55-75	45-60	35-45	35-40	15-20
	18-31	Gravelly sandy loam, gravelly sandy clay loam.	SM-SC	A-2	0	60-75	50-70	35-50	20-35	20-30	5-10
	31-60	Very gravelly sand, very gravelly loamy sand, extremely gravelly sand.	GP-GM, GP	A-1	0	40-50	20-35	10-25	0-10	---	NP
Wardenot-----	0-5	Gravelly fine sandy loam.	SM	A-1, A-2, A-4	0	60-80	50-75	40-60	20-40	20-25	NP-5
	5-60	Stratified very gravelly fine sandy loam to extremely cobbly loamy sand.	GP-GM, GM	A-1	10-40	25-50	20-45	15-40	5-15	---	NP
Belted-----	0-4	Gravelly fine sandy loam.	SM, GM	A-1, A-2	0-10	55-80	50-75	40-60	15-30	---	NP
	4-14	Sandy clay loam, loam, gravelly clay loam.	SC, CL	A-6, A-2	0	65-100	55-100	45-80	25-60	30-40	10-15
	14-25	Cemented-----	---	---	---	---	---	---	---	---	---
	25-60	Very gravelly sand, extremely gravelly sand.	GP	A-1	0-15	20-40	15-35	10-20	0-5	---	NP
142*: Unsel-----	0-8	Gravelly fine sandy loam.	SM-SC	A-2	0	75-85	55-75	40-60	25-35	25-30	5-10
	8-18	Gravelly clay loam, gravelly sandy clay loam.	SC	A-6	0	75-85	55-75	45-60	35-45	35-40	15-20
	18-31	Gravelly sandy loam, gravelly sandy clay loam.	SM-SC	A-2	0	60-75	50-70	35-50	20-35	20-30	5-10
	31-60	Very gravelly sand, very gravelly loamy sand, extremely gravelly sand.	GP-GM, GP	A-1	0	40-50	20-35	10-25	0-10	---	NP
Caphor-----	0-7	Fine sandy loam	SM-SC, SM	A-2, A-4	0	90-100	80-95	65-85	25-40	20-30	NP-10
	7-17	Sandy loam, fine sandy loam.	SM-SC, SM	A-2, A-4	0	90-100	80-95	65-85	25-40	20-30	NP-10
	17-35	Sandy loam, fine sandy loam.	SM, SM-SC	A-2	0	90-100	80-95	65-85	20-35	20-30	NP-10
	35-60	Stratified gravelly coarse sand to very gravelly loamy sand.	GP-GM, GM, SP-SM, SM	A-1	0-10	50-75	35-60	20-35	5-20	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
142*: Chedehap-----	0-5	Coarse sandy loam	SM	A-1, A-2	0-5	90-100	85-95	35-50	20-35	15-25	NP-5
	5-12	Sandy loam, coarse sandy loam.	SM	A-1, A-2	0-5	90-100	85-95	40-55	20-35	15-25	NP-5
	12-37	Sandy loam, coarse sandy loam.	SM	A-1, A-2	0-5	90-100	85-95	40-55	20-35	15-25	NP-5
	37-60	Coarse sand, loamy coarse sand.	SM	A-1	0-5	90-100	85-95	20-40	10-20	---	NP
150*: Chedehap-----	0-5	Coarse sandy loam	SM	A-1, A-2	0-5	90-100	85-95	35-50	20-35	15-25	NP-5
	5-12	Sandy loam, coarse sandy loam.	SM	A-1, A-2	0-5	90-100	85-95	40-55	20-35	15-25	NP-5
	12-37	Sandy loam, coarse sandy loam.	SM	A-1, A-2	0-5	90-100	85-95	40-55	20-35	15-25	NP-5
	37-60	Coarse sand, loamy coarse sand.	SM	A-1	0-5	90-100	85-95	20-40	10-20	---	NP
Enko-----	0-6	Gravelly fine sandy loam.	SM-SC	A-2	0	60-80	50-75	40-65	15-30	20-25	5-10
	6-12	Loam, sandy loam	SM-SC, CL-ML	A-4	0	95-100	85-100	60-90	35-70	20-30	5-10
	12-18	Loam, fine sandy loam, sandy loam.	SM-SC, CL-ML	A-4	0	95-100	85-100	75-90	40-65	20-25	5-10
	18-60	Loam, fine sandy loam, sandy loam.	SM-SC, CL-ML	A-2, A-4	0	95-100	75-100	60-90	30-65	20-25	5-10
Ricert-----	0-6	Gravelly fine sandy loam.	SM, SM-SC	A-2, A-4	0	65-80	50-75	40-60	25-40	20-30	NP-10
	6-18	Loam, clay loam	CL	A-6, A-7	0	90-100	85-100	80-90	70-80	35-45	15-20
	18-60	Very gravelly sandy loam, very gravelly loamy sand, extremely gravelly loamy sand.	GM, GP-GM	A-1	0-15	30-60	20-50	15-35	5-25	---	NP
160*: Batan-----	0-5	Silt loam-----	ML	A-4	0	100	100	95-100	85-95	30-35	5-10
	5-68	Stratified silt loam to silty clay loam.	CL	A-6	0	100	100	95-100	85-95	30-40	15-25
Batan, slightly saline-----	0-5	Silt loam-----	ML	A-4	0	100	100	95-100	85-95	30-35	NP-5
	5-68	Stratified silt loam to silty clay.	CL	A-6	0	100	100	95-100	85-95	30-40	15-25

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
161----- Batan	0-5	Silt loam-----	ML	A-4	0	100	100	95-100	85-95	30-35	5-10
	5-68	Stratified silt loam to silty clay loam.	CL	A-6	0	100	100	95-100	85-95	30-40	15-25
162*: Batan	0-5	Silt loam-----	ML	A-4	0	100	100	95-100	85-95	30-35	5-10
	5-68	Stratified silt loam to silty clay loam.	CL	A-6	0	100	100	95-100	85-95	30-40	15-25
Kelk, saline----	0-3	Silt loam-----	CL-ML, ML	A-4	0	100	100	95-100	85-95	25-35	5-10
	3-20	Silt loam-----	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
	20-40	Silt loam-----	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
	40-60	Silt loam-----	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
Kelk, occasionally flooded-----	0-14	Silt loam-----	CL-ML, CL	A-4, A-6	0	95-100	95-100	95-100	75-90	25-35	5-15
	14-51	Silt loam-----	CL-ML, CL	A-4, A-6	0	95-100	95-100	95-100	85-95	25-35	5-15
	51-60	Silt loam-----	CL-ML, CL	A-4, A-6	0	95-100	90-100	90-100	80-95	25-35	5-15
168*: Batan	0-5	Silt loam-----	ML	A-4	0	100	100	95-100	85-95	30-35	5-10
	5-68	Stratified silt loam to silty clay loam.	CL	A-6	0	100	100	95-100	85-95	30-40	15-25
Bubus-----	0-6	Very fine sandy loam.	ML	A-4	0	85-95	75-90	70-80	50-60	25-30	NP-5
	6-60	Stratified sandy loam to silt loam.	ML	A-4	0	95-100	90-100	80-90	50-60	25-30	NP-5
Ocala-----	0-4	Silt loam-----	ML, CL	A-4, A-6	0	100	100	95-100	85-95	30-40	5-15
	4-36	Silt loam, silty clay loam.	ML, CL	A-6, A-7	0	100	100	95-100	85-95	30-50	10-20
	36-60	Silt loam, silty clay loam.	ML, CL	A-6, A-7	0	90-100	90-100	90-95	85-90	30-50	10-20
169*: Batan	0-5	Silt loam-----	ML	A-4	0	100	100	95-100	85-95	30-35	5-10
	5-68	Stratified silt loam to silty clay loam.	CL	A-6	0	100	100	95-100	85-95	30-40	15-25
Ocala, occasionally flooded-----	0-4	Silty clay loam	CL, ML	A-7	0	100	100	95-100	85-95	40-50	15-20
	4-36	Silt loam, silty clay loam.	ML, CL	A-6, A-7	0	100	100	95-100	85-95	30-50	10-20
	36-60	Silt loam, silty clay loam.	ML, CL	A-6, A-7	0	90-100	90-100	90-95	85-90	30-50	10-20
Ocala, rarely flooded-----	0-6	Silty clay loam	CL, ML	A-7	0	100	100	95-100	85-95	40-50	15-20
	6-13	Silt loam, silty clay loam.	ML, CL	A-6, A-7	0	100	100	95-100	85-95	30-50	10-20
	13-60	Silt loam, silty clay loam.	ML, CL	A-6, A-7	0	90-100	90-100	90-95	85-90	30-50	10-20

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
170*: Beoska-----	0-13	Gravelly sandy loam.	SM	A-1, A-2	0-10	70-80	55-75	35-60	20-35	15-25	NP-5
	13-24	Silt loam, silty clay loam, clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	24-55	Stratified gravelly very fine sandy loam to gravelly sandy loam.	GM, SM	A-1, A-2	0-10	60-80	55-70	30-50	20-35	---	NP
	55-60	Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.	GM	A-1	0-15	30-55	25-50	15-35	10-25	---	NP
Orovada-----	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
171----- Beoska	0-13	Silt loam-----	ML	A-4	0	85-95	75-85	70-80	55-70	30-35	NP-5
	13-24	Silt loam, silty clay loam, clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	24-55	Stratified gravelly very fine sandy loam to gravelly sandy loam.	GM, SM	A-1, A-2	0-10	55-80	50-75	30-50	20-35	15-25	NP-5
	55-60	Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.	GM	A-1	0-15	30-55	25-50	15-35	10-25	15-25	NP-5
172*: Beoska-----	0-13	Silt loam-----	ML	A-4	0	85-95	75-85	70-80	55-70	30-35	NP-5
	13-24	Silt loam, silty clay loam, clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	24-55	Stratified gravelly very fine sandy loam to gravelly sandy loam.	GM, SM	A-1, A-2	0-10	55-80	50-75	30-50	20-35	15-25	NP-5
	55-60	Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.	GM	A-1	0-15	30-55	25-50	15-35	10-25	15-25	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
172*: Tenabo-----	0-13	Silt loam-----	ML	A-4	0	95-100	90-100	85-95	75-85	25-35	NP-10
	13-20	Clay loam, silty clay loam, gravelly clay loam.	CL	A-6	0	95-100	70-95	60-90	50-85	30-40	15-25
	20-39	Indurated-----	---	---	---	---	---	---	---	---	---
	39-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP-GM, GM	A-1	5-25	40-60	35-55	25-35	5-20	---	NP
173*: Beoska-----	0-13	Very fine sandy loam.	ML, SM	A-4	0	85-95	75-95	70-80	45-65	15-25	NP-5
	13-24	Silt loam, silty clay loam, clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	24-55	Stratified gravelly very fine sandy loam to gravelly sandy loam.	GM, SM	A-1, A-2	0-10	55-80	50-75	30-50	20-35	15-25	NP-5
	55-60	Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.	GM	A-1	0-15	30-55	25-50	15-35	10-25	15-25	NP-5
Allor-----	0-12	Gravelly loam----	SM-SC	A-2, A-4	5-10	70-80	55-75	45-65	30-45	20-30	5-10
	12-34	Gravelly clay loam, gravelly sandy clay loam.	SC	A-6, A-7	0-10	70-85	55-75	45-65	35-50	35-45	15-20
	34-60	Gravelly loamy sand, very gravelly loamy sand.	SM	A-1	0-10	55-75	45-65	30-50	10-20	---	NP
174*: Beoska-----	0-13	Silt loam-----	ML	A-4	0	85-95	75-85	70-80	55-70	30-35	NP-5
	13-24	Silt loam, silty clay loam, clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	24-55	Stratified gravelly very fine sandy loam to gravelly sandy loam.	GM, SM	A-1, A-2	0-10	55-80	50-75	30-50	20-35	15-25	NP-5
	55-60	Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.	GM	A-1	0-15	30-55	25-50	15-35	10-25	15-25	NP-5

See footnote at end of table.



TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
174*: Chiara-----	0-5	Fine sandy loam	SM	A-4	0	95-100	90-100	65-75	40-50	---	NP
	5-16	Very fine sandy loam, loam, silt loam.	ML	A-4	0	95-100	90-100	80-95	70-80	25-35	NP-5
	16-20	Indurated-----	---	---	---	---	---	---	---	---	---
175*: Beoska-----	0-13	Very fine sandy loam.	ML, SM	A-4	0	85-95	75-95	70-80	45-65	15-25	NP-5
	13-24	Silt loam, silty clay loam, clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	24-55	Stratified gravelly very fine sandy loam to gravelly sandy loam.	GM, SM	A-1, A-2	0-10	55-80	50-75	30-50	20-35	15-25	NP-5
	55-60	Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.	GM	A-1	0-15	30-55	25-50	15-35	10-25	15-25	NP-5
Whirlo-----	0-12	Silt loam-----	ML	A-4	0	80-95	75-90	70-85	55-70	20-25	NP-5
	12-24	Very gravelly fine sandy loam, very gravelly loam.	GM	A-1, A-2	0-5	45-55	35-50	30-40	15-35	---	NP
	24-60	Stratified very gravelly loam to extremely gravelly coarse sandy loam.	GW-GM, GP-GM	A-1	0-5	40-50	20-35	10-25	5-10	---	NP
Misad-----	0-7	Gravelly sandy loam.	SM, SM-SC	A-1, A-2	0-5	65-80	55-70	45-60	20-35	15-25	NP-10
	7-31	Stratified fine sandy loam to very gravelly sandy loam.	GM, GM-GC, SM, SM-SC	A-1, A-2	5-10	45-65	40-60	25-40	10-25	15-25	NP-10
	31-60	Stratified very gravelly loamy sand to extremely gravelly coarse sand.	GP-GM	A-1	5-10	40-55	20-40	10-30	5-10	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
177*: Beoska-----	0-13	Very fine sandy loam.	ML, SM	A-4	0	85-95	75-95	70-80	45-65	15-25	NP-5
	13-24	Silt loam, silty clay loam, clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	24-55	Stratified gravelly very fine sandy loam to gravelly sandy loam.	GM, SM	A-1, A-2	0-10	55-80	50-75	30-50	20-35	15-25	NP-5
	55-60	Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.	GM	A-1	0-15	30-55	25-50	15-35	10-25	15-25	NP-5
Dewar-----	0-4	Gravelly loam-----	GC, CL, SC	A-6	0-5	60-90	55-80	45-80	35-70	25-35	10-15
	4-14	Gravelly silty clay loam, gravelly clay loam.	GC, CL	A-6, A-7	0-10	65-90	60-80	55-80	45-75	35-45	15-20
	14-50	Indurated-----	---	---	---	---	---	---	---	---	---
Orovada-----	0-8	Gravelly very fine sandy loam.	GM, SM	A-2, A-4	0	60-80	55-75	45-70	30-50	15-25	NP-5
	8-20	Fine sandy loam, loam, very fine sandy loam.	SM, ML	A-4	0	75-100	75-95	60-85	40-70	20-30	NP-5
	20-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
180*: Needle Peak----	0-8	Silt loam-----	CL, ML	A-6, A-7	0	100	100	95-100	80-90	30-45	10-15
	8-60	Silt loam, silty clay loam.	CL, ML	A-6, A-7	0	100	100	95-100	80-95	30-50	10-20
Batan-----	0-5	Silt loam-----	ML	A-4	0	100	100	95-100	85-95	30-35	5-10
	5-68	Stratified silt loam to silty clay loam.	CL	A-6	0	100	100	95-100	85-95	30-40	15-25
Yobe-----	0-16	Silt loam-----	ML	A-4, A-6	0	100	95-100	95-100	75-90	30-40	5-15
	16-60	Silty clay loam, silt loam.	CL, ML	A-6, A-7	0	100	95-100	95-100	85-90	30-50	10-20
190*: Wardenot-----	0-5	Gravelly fine sandy loam.	SM	A-1, A-2, A-4	0	60-80	50-75	40-60	20-40	20-25	NP-5
	5-60	Stratified very gravelly fine sandy loam to extremely cobbly loamy sand.	GP-GM, GM	A-1	10-40	25-50	20-45	15-40	5-15	---	NP
Sundown-----	0-7	Fine sand-----	SM, SP-SM	A-2, A-3	0	95-100	85-100	80-90	5-20	---	NP
	7-60	Loamy fine sand	SM	A-2	0-5	95-100	85-100	70-85	15-30	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct						
191*: Wardenot-----	0-5	Gravelly fine sandy loam.	SM	A-1, A-2, A-4	0	60-80	50-75	40-60	20-40	20-25	NP-5
	5-60	Stratified very gravelly fine sandy loam to extremely cobbly loamy sand.	GP-GM, GM	A-1	10-40	25-50	20-45	15-40	5-15	---	NP
Laxal-----	0-10	Very gravelly fine sandy loam.	GM-GC, GM	A-1, A-2	5-10	45-60	35-50	30-40	10-25	15-25	NP-10
	10-60	Stratified gravelly loam to very gravelly sand.	GP-GM, GM	A-1	0-10	35-55	30-50	20-40	5-15	---	NP
Wardenot, strongly saline	0-5	Gravelly fine sandy loam.	SM	A-1, A-2, A-4	0	60-80	50-75	40-60	20-40	20-25	NP-5
	5-60	Stratified very gravelly fine sandy loam to extremely cobbly loamy sand.	GP-GM, GM	A-1	10-40	25-50	20-45	15-40	5-15	---	NP
200*: Izo-----	0-2	Very gravelly loamy sand.	GM, GP-GM, SM, SP-SM	A-1	0-15	35-60	30-50	15-35	5-15	---	NP
	2-60	Stratified gravelly loamy coarse sand to extremely gravelly coarse sand.	GP, GP-GM	A-1	0-15	20-40	15-35	10-20	0-10	---	NP
Misad-----	0-7	Gravelly sandy loam.	SM, SM-SC	A-1, A-2	0-5	65-80	55-70	45-60	20-35	15-25	NP-10
	7-31	Stratified fine sandy loam to very gravelly sandy loam.	GM, GM-GC, SM, SM-SC	A-1, A-2	5-10	45-65	40-60	25-40	10-25	15-25	NP-10
	31-60	Stratified very gravelly loamy sand to extremely gravelly coarse sand.	GP-GM	A-1	5-10	40-55	20-40	10-30	5-10	---	NP
201*: Izo-----	0-2	Gravelly loam----	SM, GM	A-2, A-4	0-5	60-80	55-75	35-65	30-50	15-25	NP-5
	2-60	Stratified gravelly loamy coarse sand to extremely gravelly coarse sand.	GP, GP-GM	A-1	0-15	20-40	15-35	10-20	0-10	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
201*: Bubus-----	0-4	Very gravelly very fine sandy loam.	GM	A-1, A-2	0	35-60	25-50	20-45	10-35	25-30	NP-5
	4-60	Stratified sandy loam to silt loam.	ML	A-4	0	95-100	90-100	80-90	50-60	25-30	NP-5
210*: Laxal-----	0-6	Gravelly fine sandy loam.	GM	A-2, A-4	0-5	60-70	50-60	40-50	25-40	20-30	NP-5
	6-60	Stratified very gravelly sandy loam to very gravelly loamy coarse sand.	GM	A-1	0-15	35-45	30-40	15-25	10-15	---	NP
Laxal, occasionally flooded-----	0-10	Very gravelly fine sandy loam.	GM-GC, GM	A-1, A-2	5-10	45-60	35-50	30-40	10-25	15-25	NP-10
	10-60	Stratified gravelly loam to very gravelly sand.	GP-GM, GM	A-1	0-10	35-55	30-50	20-40	5-15	---	NP
211----- Laxal	0-10	Gravelly fine sandy loam.	GM, SM	A-2, A-4	0-5	60-80	50-75	45-65	25-40	20-25	NP-5
	10-60	Stratified gravelly loam to very gravelly sand.	GP-GM, GM	A-1	0-10	35-55	30-50	20-40	5-15	---	NP
212*: Laxal-----	0-10	Gravelly fine sandy loam.	GM	A-2, A-4	0-5	60-70	50-60	40-50	25-40	20-30	NP-5
	10-60	Stratified very gravelly sandy loam to very gravelly loamy coarse sand.	GM	A-1	0-15	35-45	30-40	15-25	10-15	---	NP
Tomel-----	0-4	Gravelly fine sandy loam.	GM-GC, SM-SC	A-2, A-4	0	55-80	50-75	40-65	15-40	20-25	5-10
	4-18	Very gravelly silty clay loam, very gravelly clay loam, very gravelly sandy clay loam.	GC	A-2, A-6	0	40-60	35-50	25-45	25-45	30-40	10-20
	18-33	Indurated-----	---	---	---	---	---	---	---	---	---
	33-60	Very gravelly sand, extremely gravelly sand.	GP	A-1	0	20-40	15-35	10-20	0-5	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
212*: Laxal, occasionally flooded-----	0-10	Gravelly fine sandy loam.	GM, SM	A-2, A-4	0-5	60-80	50-75	45-65	25-40	20-25	NP-5
	10-60	Stratified gravelly loam to very gravelly sand.	GP-GM, GM	A-1	0-10	35-55	30-50	20-40	5-15	---	NP
220----- Blackhawk	0-8	Very fine sandy loam.	ML	A-4	0	95-100	95-100	85-95	65-75	---	NP
	8-14	Silt loam, loam, very fine sandy loam.	ML	A-4	0	95-100	95-100	85-95	70-80	30-35	NP-5
	14-17	Cemented-----	---	---	---	---	---	---	---	---	---
	17-38	Stratified loam to gravelly coarse sand.	SM	A-1, A-2	0	75-90	70-85	35-50	10-30	---	NP
	38-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP-GM, SP, GP, SP-SM	A-1	0	45-60	20-50	10-35	0-10	---	NP
221*: Blackhawk-----	0-8	Very fine sandy loam.	ML	A-4	0	95-100	95-100	85-95	65-75	---	NP
	8-14	Silt loam, loam, very fine sandy loam.	ML	A-4	0	95-100	95-100	85-95	70-80	30-35	NP-5
	14-17	Cemented-----	---	---	---	---	---	---	---	---	---
	17-38	Stratified loam to gravelly coarse sand.	SM	A-1, A-2	0	75-90	70-85	35-50	10-30	---	NP
	38-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP-GM, SP, GP, SP-SM	A-1	0	45-60	20-50	10-35	0-10	---	NP
Tenabo-----	0-4	Very fine sandy loam.	ML	A-4	0	95-100	90-100	85-95	75-85	25-35	NP-10
	4-15	Clay loam, silty clay loam, gravelly clay loam.	CL	A-6	0	95-100	70-95	60-90	50-85	30-40	15-25
	15-28	Indurated-----	---	---	---	---	---	---	---	---	---
	28-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP-GM, GM	A-1	5-25	40-60	35-55	25-35	5-20	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct						
221*: Desatoya Variant	0-3	Very gravelly sandy loam.	GM-GC	A-2	0	45-60	35-50	25-40	10-25	20-30	5-10
	3-13	Gravelly clay loam, gravelly sandy clay loam.	SC, CL	A-6, A-7	0	70-85	55-70	45-60	40-55	35-45	15-20
	13-26	Very gravelly sandy loam.	GM	A-1	0	45-60	35-50	25-40	10-25	15-20	NP-5
	26-60	Very gravelly sand.	GP-GM, SP-SM	A-1	0	45-60	35-50	20-35	5-10	---	NP
231----- Broyles	0-11	Very fine sandy loam.	ML	A-4	0	100	95-100	85-95	60-75	---	NP
	11-60	Stratified loam to gravelly loamy sand.	SM	A-2	0	70-100	60-95	30-40	25-35	---	NP
235*: Broyles-----	0-11	Silt loam-----	ML	A-4	0	100	95-100	85-95	60-75	---	NP
	11-60	Stratified loam to gravelly loamy sand.	SM	A-2	0	70-100	60-95	30-40	25-35	---	NP
Creemon-----	0-7	Silt loam-----	ML	A-4	0	100	100	95-100	85-90	---	NP
	7-18	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	18-60	Stratified very fine sandy loam to silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
236*: Broyles-----	0-13	Very fine sandy loam.	ML	A-4	0	100	95-100	85-95	60-75	---	NP
	13-60	Stratified loam to gravelly loamy sand.	SM	A-2	0	70-100	60-95	30-40	25-35	---	NP
Broyles, moderately saline-----	0-5	Very fine sandy loam.	ML	A-4	0	95-100	95-100	85-100	50-70	20-25	NP-5
	5-11	Silt loam, very fine sandy loam, fine sandy loam.	ML, SM	A-4	0	95-100	90-100	75-90	40-55	20-25	NP-5
	11-60	Stratified loam to gravelly loamy sand.	SM	A-2	0	70-100	60-95	30-40	25-35	---	NP
237*: Broyles-----	0-11	Very fine sandy loam.	ML	A-4	0	100	95-100	85-95	60-75	---	NP
	11-60	Stratified loam to gravelly loamy sand.	SM	A-2	0	70-100	60-95	30-40	25-35	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
237*: Beoska-----	0-13	Very fine sandy loam.	ML, SM	A-4	0	85-95	75-95	70-80	45-65	15-25	NP-5
	13-24	Silt loam, silty clay loam, clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	24-55	Stratified gravelly very fine sandy loam to gravelly sandy loam.	GM, SM	A-1, A-2	0-10	55-80	50-75	30-50	20-35	15-25	NP-5
	55-60	Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.	GM	A-1	0-15	30-55	25-50	15-35	10-25	15-25	NP-5
Orovada-----	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
239*: Broyles-----	0-13	Very fine sandy loam.	ML	A-4	0	100	95-100	85-95	60-75	---	NP
	13-60	Stratified loam to gravelly loamy sand.	SM	A-2	0	70-100	60-95	30-40	25-35	---	NP
Tessfive-----	0-6	Gravelly loam----	SM-SC, GM-GC	A-4	0-5	65-80	55-70	45-60	35-50	20-30	5-10
	6-16	Gravelly loam, gravelly sandy loam.	SM-SC, GM-GC	A-4, A-1, A-2	0-5	55-80	50-70	35-60	20-50	20-30	5-10
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Perlor-----	0-7	Fine sandy loam	SM	A-2, A-4	0-5	85-100	80-100	70-90	25-40	15-25	NP-5
	7-14	Loam, sandy loam, gravelly sandy loam.	SM, ML	A-4	0-5	75-100	70-95	50-80	35-65	15-25	NP-5
	14	Weathered bedrock	---	---	---	---	---	---	---	---	---
249*: Bubus, slightly saline-----	0-6	Very fine sandy loam.	ML	A-4	0	85-95	75-90	70-80	50-60	25-30	NP-5
	6-60	Stratified sandy loam to silt loam.	ML	A-4	0	95-100	90-100	80-90	50-60	25-30	NP-5
Bubus-----	0-6	Very fine sandy loam.	ML	A-4	0	85-95	75-90	70-80	50-60	25-30	NP-5
	6-60	Stratified sandy loam to silt loam.	ML	A-4	0	95-100	90-100	80-90	50-60	25-30	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct						
260*: Umerland-----	0-11	Silt loam-----	ML	A-4	0	100	100	95-100	60-80	25-35	NP-10
	11-60	Silty clay, silty clay loam, clay.	CL, CH	A-7	0	100	100	95-100	85-95	40-55	20-30
Wendane-----	0-7	Silt loam-----	ML	A-4	0	100	100	90-100	70-95	30-40	NP-10
	7-18	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	70-80	30-40	NP-10
	18-60	Stratified silt loam to clay loam.	CL, ML	A-6, A-7	0	100	100	95-100	85-95	35-45	10-20
261*: Umerland-----	0-7	Silt loam-----	ML	A-4	0	100	100	95-100	60-80	25-35	NP-10
	7-60	Silty clay, silty clay loam, clay.	CL, CH	A-7	0	100	100	95-100	85-95	40-55	20-30
Wendane-----	0-7	Silt loam-----	ML	A-4	0	100	100	90-100	70-95	30-40	NP-10
	7-18	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	70-80	30-40	NP-10
	18-60	Stratified silt loam to clay loam.	CL, ML	A-6, A-7	0	100	100	95-100	85-95	35-45	10-20
Ocala-----	0-4	Silt loam-----	ML, CL	A-4, A-6	0	100	100	95-100	85-95	30-40	5-15
	4-16	Silt loam, silty clay loam.	ML, CL	A-6, A-7	0	100	100	95-100	85-95	30-50	10-20
	16-60	Silt loam, silty clay loam.	ML, CL	A-6, A-7	0	90-100	90-100	90-95	85-90	30-50	10-20
262----- Umerland	0-7	Silt loam-----	ML	A-4	0	100	100	95-100	60-80	25-35	NP-10
	7-60	Silty clay, silty clay loam.	CL, CH	A-7	0	100	100	90-100	85-95	40-55	20-30
270*: Tomel-----	0-3	Very gravelly sandy loam.	GM	A-1	0	35-60	25-50	20-35	10-25	20-25	NP-5
	3-12	Very gravelly clay loam, very gravelly sandy clay loam.	GC	A-2	0	40-60	35-50	30-40	20-35	30-35	10-15
	12-27	Indurated-----	---	---	---	---	---	---	---	---	---
	27-60	Very gravelly sand, extremely gravelly sand.	GP	A-1	0-5	20-40	15-35	10-20	0-5	---	NP
Laxal-----	0-10	Gravelly loam----	GM	A-2, A-4	0-5	60-70	50-60	40-50	25-40	20-30	NP-5
	10-60	Stratified very gravelly sandy loam to very gravelly loamy coarse sand.	GM	A-1	0-15	35-45	30-40	15-25	10-15	---	NP
280*: Chiara-----	0-5	Gravelly loam----	SM	A-4	0-5	70-80	55-70	50-65	35-50	15-25	NP-5
	5-16	Very fine sandy loam, silt loam, loam.	ML	A-4	0	95-100	95-100	95-100	75-85	15-25	NP-5
	16-20	Indurated-----	---	---	---	---	---	---	---	---	---

See footnote at end of table.



TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
280*: Filliran-----	0-7	Very gravelly loam.	GM, GM-GC	A-1, A-2	0-5	45-60	35-50	30-40	20-30	15-25	NP-10
	7-12	Gravelly silt loam.	GM-GC, GC, SM-SC, SC	A-4, A-6	0-5	65-80	55-70	45-60	35-50	20-35	5-20
	12-33	Clay, silty clay loam, gravelly clay.	CL, CH	A-7	0	80-100	70-90	65-85	60-80	40-55	25-35
	33-60	Cemented-----	---	---	---	---	---	---	---	---	---
284*: Chiara-----	0-5	Gravelly loam----	SM	A-4	0-5	70-80	55-70	50-65	35-50	15-25	NP-5
	5-16	Very fine sandy loam, silt loam, loam.	ML	A-4	0	95-100	95-100	95-100	75-85	15-25	NP-5
	16-20	Indurated-----	---	---	---	---	---	---	---	---	---
Dewar-----	0-4	Gravelly loam----	GC, CL, SC	A-6	0-5	60-90	55-80	45-80	35-70	25-35	10-15
	4-14	Gravelly silty clay loam, gravelly clay loam.	GC, CL	A-6, A-7	0-10	65-90	60-80	55-80	45-75	35-45	15-20
	14-50	Indurated-----	---	---	---	---	---	---	---	---	---
290----- Creemon	0-10	Silt loam-----	ML	A-4	0	100	100	95-100	85-90	---	NP
	10-15	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	15-60	Stratified very fine sandy loam to silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
291*: Creemon-----	0-10	Silt loam-----	ML	A-4	0	100	100	95-100	85-90	---	NP
	10-15	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	15-60	Stratified very fine sandy loam to silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
Wholan-----	0-13	Silt loam-----	ML	A-4	0	100	100	95-100	80-90	20-30	NP-5
	13-60	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	75-90	20-30	NP-5
Wholan, alkaline	0-13	Silt loam-----	ML	A-4	0	100	100	95-100	80-90	20-30	NP-5
	13-60	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	75-90	20-30	NP-5
295*: Creemon-----	0-10	Silt loam-----	ML	A-4	0	100	100	95-100	85-90	---	NP
	10-15	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	15-60	Stratified very fine sandy loam to silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
Cren-----	0-7	Silt loam-----	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	7-26	Silt loam-----	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	26-60	Stratified fine sandy loam to silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct						
296*: Creemon-----	0-10	Silt loam-----	ML	A-4	0	100	100	95-100	85-90	---	NP
	10-15	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	15-60	Stratified very fine sandy loam to silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
Hessing-----	0-4	Silt loam-----	CL-ML	A-4	0	100	100	95-100	85-95	25-30	5-10
	4-11	Silt loam, silty clay loam.	CL	A-6	0	100	100	95-100	85-95	30-40	10-20
	11-18	Very fine sandy loam, silt loam.	CL-ML	A-4	0	95-100	95-100	85-95	60-70	25-30	5-10
	18-30	Gravelly loam----	GM	A-4	0	60-70	55-65	45-55	35-50	25-30	NP-5
	30-60	Stratified very gravelly loamy coarse sand to extremely gravelly sand.	GP-GM, GW-GM	A-1	0	35-45	20-35	10-20	5-10	---	NP
297*: Creemon-----	0-10	Silt loam-----	ML	A-4	0	100	100	95-100	85-90	---	NP
	10-15	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	15-60	Stratified very fine sandy loam to silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
Rasille-----	0-6	Very fine sandy loam.	ML	A-4	0	100	100	95-100	60-80	15-25	NP-5
	6-15	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	75-100	20-30	NP-5
	15-60	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	75-100	20-30	NP-5
Tulase-----	0-6	Very fine sandy loam.	ML, CL-ML	A-4	0	100	100	95-100	60-70	15-25	NP-10
	6-60	Very fine sandy loam, silt loam.	CL-ML, ML	A-4	0	100	100	95-100	70-85	15-25	NP-10
298*: Creemon-----	0-10	Silt loam-----	ML	A-4	0	100	100	95-100	85-90	---	NP
	10-15	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	15-45	Stratified very fine sandy loam to silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	45-60	Stratified gravelly very fine sandy loam to fine sandy loam.	SM	A-4	0	80-90	70-85	60-70	35-50	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
298*: Misad-----	0-7	Gravelly sandy loam.	SM, SM-SC	A-1, A-2	0-5	65-80	55-70	45-60	20-35	15-25	NP-10
	7-31	Stratified fine sandy loam to very gravelly sandy loam.	GM, GM-GC, SM, SM-SC	A-1, A-2	5-10	45-65	40-60	25-40	10-25	15-25	NP-10
	31-60	Stratified very gravelly loamy sand to extremely gravelly coarse sand.	GP-GM	A-1	5-10	40-55	20-40	10-30	5-10	---	NP
301*: Cren-----	0-7	Silt loam-----	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	7-26	Silt loam-----	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	26-60	Silt loam-----	ML	A-4	0	100	100	95-100	80-90	15-25	NP-5
Ocala-----	0-4	Silt loam-----	ML, CL	A-4, A-6	0	100	100	95-100	85-95	30-40	5-15
	4-16	Silt loam, silty clay loam.	ML, CL	A-6, A-7	0	100	100	95-100	85-95	30-50	10-20
	16-60	Silt loam, silty clay loam.	ML, CL	A-6, A-7	0	90-100	90-100	90-95	85-90	30-50	10-20
Playas.											
310*: Yobe-----	0-16	Silt loam-----	ML	A-4, A-6	0	100	95-100	95-100	75-90	30-40	5-15
	16-60	Silty clay loam, silt loam.	CL, ML	A-6, A-7	0	100	95-100	95-100	85-90	30-50	10-20
Kawich-----	0-4	Fine sand-----	SM	A-2	0	100	100	75-90	15-30	---	NP
	4-60	Fine sand-----	SM	A-2	0	100	100	75-90	15-30	---	NP
Playas.											
320*: Newpass-----	0-4	Very gravelly fine sandy loam.	GM, GM-GC	A-1, A-2	5-10	40-55	30-45	25-40	10-20	15-25	NP-10
	4-14	Clay-----	CH	A-7	0-5	85-100	80-95	75-90	70-85	50-65	25-35
	14-24	Very cobbly silty clay, very gravelly clay, gravelly clay.	CH	A-7	15-50	70-85	55-75	50-70	50-65	50-65	25-35
	24-26	Cemented-----	---	---	---	---	---	---	---	---	---
	26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Jung-----	0-8	Very cobbly loam	GM-GC, SM-SC	A-4	35-50	65-80	50-65	45-60	35-50	25-30	5-10
	8-19	Very cobbly clay loam, very cobbly clay, very gravelly clay loam.	GC	A-7	15-40	55-65	50-60	40-50	35-45	40-55	20-30
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit  Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct						
321*: Newpass-----	0-4	Very gravelly fine sandy loam.	GM, GM-GC	A-1, A-2	5-10	40-55	30-45	25-40	10-20	15-25	NP-10
	4-14	Clay-----	CH	A-7	0-5	85-100	80-95	75-90	70-85	50-65	25-35
	14-24	Very cobbly silty clay, very gravelly clay, gravelly clay.	CH	A-7	15-50	70-85	55-75	50-70	50-65	50-65	25-35
	24-26	Cemented-----	---	---	---	---	---	---	---	---	---
	26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Old Camp, strongly sloping-----	0-2	Gravelly loam----	SM-SC	A-4	0-5	70-85	60-75	50-65	35-50	25-30	5-10
	2-11	Very cobbly clay loam, extremely stony sandy clay loam, very stony clay loam.	GC	A-2, A-6	35-50	40-55	35-50	30-45	25-40	30-40	15-25
	11-15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Old Camp, moderately steep-----	0-2	Very gravelly loam.	GM, GM-GC	A-1, A-2	0-15	50-60	35-45	30-40	20-30	15-25	NP-10
	2-11	Very cobbly clay loam, extremely stony sandy clay loam, very stony clay loam.	GC	A-2, A-6	35-50	40-55	35-50	30-45	25-40	30-40	15-25
	11-15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
360*: Eastwell-----	0-5	Gravelly loam----	SM, ML, GM	A-4	0-5	65-80	60-75	40-60	35-55	25-35	NP-10
	5-15	Very gravelly loam, very gravelly sandy loam.	GM, GM-GC, GC	A-1, A-2	0-10	40-60	35-50	20-40	10-30	20-35	NP-15
	15-17	Cemented-----	---	---	---	---	---	---	---	---	---
	17-60	Very gravelly loam, very cobbly loam.	GM, GM-GC	A-2, A-4	25-45	50-70	45-65	35-55	30-50	20-30	NP-10
Blackhawk-----	0-3	Very fine sandy loam.	ML	A-4	0	95-100	95-100	85-95	65-75	---	NP
	3-14	Silt loam, loam, very fine sandy loam.	ML	A-4	0	95-100	95-100	85-95	70-80	30-35	NP-5
	14-30	Cemented-----	---	---	---	---	---	---	---	---	---
	30-48	Stratified loam to gravelly coarse sand.	SM	A-1, A-2	0	75-90	70-85	35-50	10-30	---	NP
	48-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP-GM, SP, GP, SP-SM	A-1	0	45-60	20-50	10-35	0-10	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
360*: Pineval-----	0-5	Gravelly loam----	CL-ML, GM-GC	A-4	0	65-85	60-75	45-65	40-55	20-30	5-10
	5-11	Very gravelly clay loam, very gravelly loam, very gravelly sandy clay loam.	GC	A-2	0	35-60	25-50	20-40	15-35	30-40	10-15
	11-60	Stratified very gravelly sandy loam to extremely gravelly sand.	GP-GM, GM	A-1	0-25	30-60	20-50	15-40	5-20	---	NP
404*: Glean-----	0-6	Very gravelly loam.	GM	A-1, A-2	0-10	30-55	25-50	20-40	10-30	20-30	NP-5
	6-39	Very gravelly sandy loam, very gravelly loam.	GM	A-1, A-2	0-25	30-65	25-60	20-50	10-35	20-30	NP-5
	39-51	Very cobbly sandy loam, very cobbly loam, very gravelly sandy loam.	GM, SM	A-1, A-2	20-45	45-70	40-65	30-55	15-25	20-30	NP-5
	51	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Gando-----	0-4	Very cobbly loam	SM	A-2, A-4	30-40	65-75	60-70	40-50	30-40	20-25	NP-5
	4-10	Very gravelly loam, extremely gravelly loam.	GM	A-1, A-2	10-25	30-45	25-40	20-35	15-30	20-25	NP-5
	10-14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
441*: Gund-----	0-4	Silt loam-----	CL-ML, ML	A-4	0	100	100	95-100	80-90	25-35	5-10
	4-23	Silt loam-----	CL-ML, CL	A-4, A-6	0	100	100	95-100	80-90	25-35	5-15
	23-60	Silty clay, clay	CH	A-7	0	100	100	95-100	85-95	50-60	25-35
Umland-----	0-7	Silt loam-----	ML	A-4	0	100	100	95-100	60-80	25-35	NP-10
	7-60	Silty clay loam, silty clay, clay.	CL, CH	A-7	0	100	100	95-100	85-95	40-55	20-30
442*: Gund-----	0-4	Silt loam-----	CL-ML, ML	A-4	0	100	100	95-100	80-90	25-35	5-10
	4-23	Silt loam-----	CL-ML, CL	A-4, A-6	0	100	100	95-100	80-90	25-35	5-15
	23-60	Silty clay, clay	CH	A-7	0	100	100	95-100	85-95	50-60	25-35
Bubus-----	0-6	Very fine sandy loam.	ML	A-4	0	85-95	75-90	70-80	50-60	25-30	NP-5
	6-60	Stratified sandy loam to silt loam.	ML	A-4	0	95-100	90-100	80-90	50-60	25-30	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
442*: Wendane-----	0-7	Silt loam-----	ML	A-4	0	100	100	90-100	70-95	30-40	NP-10
	7-18	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	70-80	30-40	NP-10
	18-60	Stratified silt loam to clay loam.	CL, ML	A-6, A-7	0	100	100	95-100	85-95	35-45	10-20
443*: Gund-----	0-4	Silt loam-----	CL-ML, ML	A-4	0	100	100	95-100	80-90	25-35	5-10
	4-23	Silt loam-----	CL-ML, CL	A-4, A-6	0	100	100	95-100	80-90	25-35	5-15
	23-60	Silty clay, clay	CH	A-7	0	100	100	95-100	85-95	50-60	25-35
Batan-----	0-5	Silt loam-----	ML	A-4	0	100	100	95-100	85-95	30-35	5-10
	5-68	Stratified silt loam to silty clay loam.	CL	A-6	0	100	100	95-100	85-95	30-40	15-25
444*: Gund-----	0-4	Silt loam-----	CL-ML, ML	A-4	0	100	100	95-100	80-90	25-35	5-10
	4-23	Silt loam-----	CL-ML, CL	A-4, A-6	0	100	100	95-100	80-90	25-35	5-15
	23-60	Silty clay, clay	CH	A-7	0	100	100	95-100	85-95	50-60	25-35
Gund, drained---	0-4	Silt loam-----	CL-ML, ML	A-4	0	100	100	95-100	80-90	25-35	5-10
	4-23	Silt loam-----	CL-ML, CL	A-4, A-6	0	100	100	95-100	80-90	25-35	5-15
	23-60	Silty clay, clay	CH	A-7	0	100	100	95-100	85-95	50-60	25-35
461*: Hapgood-----	0-17	Very gravelly loam.	GM-GC	A-2	5-10	50-60	35-50	30-45	25-35	25-30	5-10
	17-40	Very gravelly loam.	GC, GM-GC	A-2	5-25	50-60	35-50	30-40	20-35	25-35	5-15
	40-60	Very cobbly loam, very gravelly loam.	GC, GM-GC	A-2	15-40	55-65	50-60	35-45	25-35	25-35	5-15
Packer-----	0-10	Extremely gravelly loam.	GM-GC, GP-GC	A-2	15-25	30-40	15-30	10-25	5-20	20-30	5-10
	10-21	Extremely cobbly clay loam, extremely cobbly loam.	GC	A-2	40-55	40-55	30-45	25-40	15-30	30-40	10-15
	21-60	Extremely cobbly sandy loam, extremely cobbly loam.	GM	A-1	40-55	40-55	30-45	20-35	10-25	20-25	NP-5
Layview-----	0-3	Very gravelly sandy loam.	GM-GC	A-2	10-15	35-60	30-55	20-35	10-20	25-30	5-10
	3-12	Very gravelly loam, very gravelly clay loam.	GC	A-2, A-6	10-15	35-60	30-55	25-45	20-40	30-40	15-20
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches Pct	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In										
463*:											
Hapgood-----	0-17	Gravelly loam----	SM-SC	A-4	5-10	70-80	60-75	55-70	35-50	25-30	5-10
	17-40	Very gravelly loam.	GC, GM-GC	A-2	5-25	50-60	35-50	30-40	20-35	25-35	5-15
	40-60	Very cobbly loam, very gravelly loam.	GC, GM-GC	A-2	15-40	55-65	50-60	35-45	25-35	25-35	5-15
Packer-----	0-10	Extremely cobbly sandy loam.	GM-GC	A-2	40-50	35-50	20-35	15-30	10-25	20-30	5-10
	10-21	Extremely cobbly clay loam, extremely cobbly loam.	GC	A-2	45-55	40-55	30-45	25-40	15-30	30-40	10-15
	21-60	Extremely cobbly sandy loam, extremely cobbly loam, very cobbly loam.	GM	A-1, A-2	40-50	40-55	30-50	20-45	10-35	20-25	NP-5
Rubble land.											
465*:											
Hapgood-----	0-17	Gravelly loam----	SM-SC	A-4	5-10	70-80	60-75	55-70	35-50	25-30	5-10
	17-40	Very gravelly loam.	GC, GM-GC	A-2	5-25	50-60	35-50	30-40	20-35	25-35	5-15
	40-60	Very cobbly loam, very gravelly loam.	GC, GM-GC	A-2	15-40	55-65	50-60	35-45	25-35	25-35	5-15
Halacan-----	0-5	Very gravelly loam.	GM	A-2, A-4	5-15	45-55	35-50	30-45	25-40	30-40	NP-5
	5-17	Extremely channery loam, very channery loam.	GM	A-2, A-4, A-1	40-55	30-55	20-50	15-45	10-40	30-40	NP-5
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Hatur-----	0-14	Very gravelly loam.	GM	A-1, A-2	0-5	40-55	35-50	25-40	20-35	20-25	NP-5
	14-29	Extremely gravelly loam, extremely gravelly sandy loam.	GM, GP-GM	A-1	0-25	20-30	15-25	10-25	5-20	20-25	NP-5
	29-33	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
491*:											
Enko-----	0-6	Sandy loam-----	SM-SC	A-4	0	95-100	85-100	60-75	35-50	20-30	5-10
	6-12	Loam, sandy loam, fine sandy loam.	SM-SC, CL-ML	A-4	0	95-100	85-100	60-90	35-70	20-30	5-10
	12-18	Sandy loam, fine sandy loam, loam.	SM-SC, CL-ML	A-4	0	95-100	85-100	75-90	40-65	20-25	5-10
	18-60	Sandy loam, fine sandy loam, loam.	SM-SC, CL-ML	A-2, A-4	0	85-100	75-100	60-90	30-65	20-25	5-10

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct						
491*: Orovada-----	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-65	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
492*: Enko-----	0-14	Sandy loam-----	SM, ML	A-4	0	90-100	85-100	50-80	35-55	15-25	NP-5
	14-53	Loam, fine sandy loam, sandy loam.	CL-ML, SM-SC, ML, SM	A-4	0	90-100	85-100	50-90	35-70	15-25	NP-10
	53-63	Very gravelly loamy sand, very gravelly sand, extremely gravelly sand.	GP-GM, GP	A-1	0-20	30-55	25-45	15-25	0-10	---	NP
Glyphs-----	0-7	Fine sandy loam	CL-ML, SM-SC	A-4	0	95-100	85-95	75-85	45-60	25-30	5-10
	7-17	Gravelly sandy clay loam, gravelly clay loam.	CL, SC	A-6, A-7	0	80-90	60-75	55-65	40-55	35-45	15-20
	17-37	Gravelly sandy loam.	SM-SC, GM-GC	A-2	0	60-80	55-75	40-55	20-30	20-25	5-10
	37-60	Very gravelly coarse sand.	GP, GP-GM, SP, SP-SM	A-1	0-5	40-65	35-45	15-25	0-10	---	NP
493*: Enko-----	0-6	Sandy loam-----	SM-SC	A-4	0	95-100	85-100	60-75	35-50	20-30	5-10
	6-12	Loam, sandy loam, fine sandy loam.	SM-SC, CL-ML	A-4	0	95-100	85-100	60-90	35-70	20-30	5-10
	12-18	Sandy loam, fine sandy loam, loam.	SM-SC, CL-ML	A-4	0	95-100	85-100	75-90	40-65	20-25	5-10
	18-60	Sandy loam, fine sandy loam, loam.	SM-SC, CL-ML	A-2, A-4	0	85-100	75-100	60-90	30-65	20-25	5-10
Orovada-----	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-65	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
512*: Hessing-----	0-4	Gravelly silt loam.	CL-ML	A-4	0	75-85	60-75	55-65	50-60	25-30	5-10
	4-11	Silt loam, silty clay loam.	CL	A-6	0	100	100	95-100	85-95	30-40	10-20
	11-18	Very fine sandy loam, silt loam.	CL-ML	A-4	0	95-100	95-100	85-95	60-70	25-30	5-10
	18-30	Gravelly loam----	GM	A-4	0	60-70	55-65	45-55	35-50	25-30	NP-5
	30-60	Stratified very gravelly loamy coarse sand to extremely gravelly sand.	GP-GM, GW-GM	A-1	0	35-45	20-35	10-20	5-10	---	NP

See footnote at end of table.



TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
512*: Relley-----	0-8	Silt loam-----	CL-ML, ML	A-4	0	95-100	95-100	95-100	75-90	25-35	5-10
	8-16	Silt loam-----	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
	16-28	Silt loam-----	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
	28-60	Silt loam-----	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
560----- Jesse Camp	0-4	Silt loam-----	ML	A-4	0	100	100	90-100	65-80	25-35	NP-10
	4-12	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	70-85	25-35	NP-10
	12-60	Silt loam-----	ML	A-4, A-6	0	100	100	95-100	75-85	30-40	5-15
621*: Loncan-----	0-9	Gravelly loam----	GC, CL	A-6	0-15	65-80	60-75	50-70	35-60	30-35	10-15
	9-22	Very gravelly loam, extremely cobbly loam, very gravelly sandy clay loam.	GC	A-2	10-55	35-60	30-50	25-40	20-35	30-35	10-15
	22-26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Gando-----	0-4	Very gravelly loam.	GM-GC, GM	A-2, A-1	0-5	40-60	25-50	20-35	15-30	20-30	NP-10
	4-10	Extremely gravelly loam, very gravelly loam, extremely gravelly sandy loam.	GM	A-2, A-1	0-30	30-40	20-35	15-30	10-25	20-35	NP-10
	10-14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Glean-----	0-6	Very gravelly loam.	GM	A-1, A-2	0-10	30-55	25-50	20-40	10-30	20-30	NP-5
	6-39	Very gravelly sandy loam, very gravelly loam.	GM	A-1, A-2	0-25	30-65	25-60	20-50	10-35	20-30	NP-5
	39-51	Very cobbly sandy loam, very cobbly loam, very gravelly sandy loam.	GM, SM	A-1, A-2	20-45	45-70	40-65	30-55	15-25	20-30	NP-5
	51	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
632*: McConnel-----	0-6	Gravelly loam----	GM	A-2, A-4	0	60-70	50-70	40-60	25-45	15-25	NP-5
	6-12	Loam, sandy loam, fine sandy loam.	ML, SM	A-4	0	95-100	90-100	65-80	45-60	15-25	NP-5
	12-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP	A-1	0-15	25-35	10-35	5-15	0-5	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
632*: Orovada-----	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-65	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
Misad-----	0-7	Gravelly very fine sandy loam.	SM, SM-SC, GM, GM-GC	A-2, A-4	0-5	65-80	55-70	50-65	30-50	15-25	NP-10
	7-31	Stratified fine sandy loam to very gravelly sandy loam.	GM, GM-GC, SM, SM-SC	A-1, A-2	5-10	45-65	40-60	25-40	10-25	15-25	NP-10
	31-60	Stratified very gravelly loamy sand to extremely gravelly coarse sand.	GP-GM	A-1	5-10	40-55	20-40	10-30	5-10	---	NP
633*: McConnel-----	0-6	Gravelly loam----	GM	A-2, A-4	0	60-70	50-70	40-60	25-45	15-25	NP-5
	6-12	Loam, sandy loam, fine sandy loam.	ML, SM	A-4	0	95-100	90-100	65-80	45-60	15-25	NP-5
	12-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP	A-1	0-15	25-35	10-35	5-15	0-5	---	NP
Rasille-----	0-6	Silt loam-----	ML	A-4	0	100	100	95-100	85-100	20-30	NP-5
	6-15	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	75-100	20-30	NP-5
	15-60	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	75-100	20-30	NP-5
Wholan-----	0-6	Silt loam-----	ML	A-4	0	100	100	95-100	80-90	20-30	NP-5
	6-60	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	75-90	20-30	NP-5
635*: McConnel-----	0-6	Gravelly loam----	GM	A-2, A-4	0	60-70	50-70	40-60	25-45	15-25	NP-5
	6-12	Loam, sandy loam, fine sandy loam.	ML, SM	A-4	0	95-100	90-100	65-80	45-60	15-25	NP-5
	12-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP	A-1	0-15	25-35	10-35	5-15	0-5	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
635*: Rasille-----	0-6	Silt loam-----	ML	A-4	0	100	100	95-100	85-100	20-30	NP-5
	6-15	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	75-100	20-30	NP-5
	15-41	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	75-100	20-30	NP-5
	41-60	Stratified fine sandy loam to very gravelly coarse sand.	SM, GM	A-1	0	55-80	50-75	15-35	10-20	---	NP
636*: McConnel-----	0-6	Gravelly loam----	GM	A-2, A-4	0	60-70	50-70	40-60	25-45	15-25	NP-5
	6-12	Loam, sandy loam, fine sandy loam.	ML, SM	A-4	0	95-100	90-100	65-80	45-60	15-25	NP-5
	12-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP	A-1	0-15	25-35	10-35	5-15	0-5	---	NP
Defler-----	0-5	Gravelly fine sandy loam.	GM, SM	A-2, A-4, A-1	0-5	55-80	50-75	40-60	20-40	15-25	NP-5
	5-35	Very gravelly fine sandy loam, very gravelly loam, very gravelly sandy loam.	GM	A-1, A-2	0-10	30-55	25-50	15-40	10-30	15-25	NP-5
	35-70	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP-GM, GM	A-1	0-10	25-40	20-35	10-20	5-15	---	NP
Rasille-----	0-6	Silt loam-----	ML	A-4	0	100	100	95-100	85-100	20-30	NP-5
	6-15	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	75-100	20-30	NP-5
	15-60	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	75-100	20-30	NP-5
637*: McConnel-----	0-6	Fine sandy loam	ML	A-4	0	95-100	85-95	70-80	50-60	15-25	NP-5
	6-12	Loam, sandy loam, fine sandy loam.	ML, SM	A-4	0	95-100	90-100	65-80	45-60	15-25	NP-5
	12-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP	A-1	0-15	25-35	10-35	5-15	0-5	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct						
637*: Orovada-----	0-8	Very fine sandy loam.	ML	A-4	0	95-100	90-100	80-95	60-75	25-35	NP-5
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-65	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
McConnel, gravelly-----	0-6	Gravelly fine sandy loam.	GM	A-2, A-4	0	60-70	50-70	40-60	25-45	15-25	NP-5
	6-12	Loam, sandy loam, fine sandy loam.	ML, SM	A-4	0	95-100	90-100	65-80	45-60	15-25	NP-5
	12-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP	A-1	0-15	25-35	10-35	5-15	0-5	---	NP
638*: McConnel-----	0-6	Fine sandy loam	ML	A-4	0	95-100	85-95	70-80	50-60	15-25	NP-5
	6-12	Loam, sandy loam, fine sandy loam.	ML, SM	A-4	0	95-100	90-100	65-80	45-60	15-25	NP-5
	12-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP	A-1	0-15	25-35	10-35	5-15	0-5	---	NP
Wholan-----	0-6	Silt loam-----	ML	A-4	0	100	100	95-100	80-90	20-30	NP-5
	6-60	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	75-90	20-30	NP-5
670*: Filiran-----	0-7	Silt loam-----	ML, CL-ML	A-4	0	90-100	90-100	80-95	50-70	15-25	NP-10
	7-12	Gravelly silt loam.	GM-GC, GC, SM-SC, SC	A-4, A-6	0-5	65-80	55-70	45-60	35-50	20-35	5-20
	12-33	Clay, silty clay loam, gravelly clay.	CL, CH	A-7	0	80-100	70-90	65-85	60-80	40-55	25-35
	33-60	Cemented-----	---	---	---	---	---	---	---	---	---
Pineval-----	0-5	Gravelly fine sandy loam.	SM-SC	A-2	0	65-85	60-75	50-70	20-35	20-30	5-10
	5-11	Very gravelly clay loam, very gravelly loam, very gravelly sandy clay loam.	GC	A-2	0	35-60	25-50	20-40	15-35	30-40	10-15
	11-60	Stratified very gravelly sandy loam to extremely gravelly sand.	GP-GM, GM	A-1	0-25	30-60	20-50	15-40	5-20	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
670*: Kingingham-----	0-7	Gravelly very fine sandy loam.	SM	A-2, A-4	0-5	70-85	55-70	50-65	30-50	15-25	NP-5
	7-22	Gravelly clay loam, gravelly clay, gravelly silty clay loam.	GC, CL, CH	A-7	0-5	70-85	55-70	50-65	45-60	40-55	20-30
	22-60	Indurated-----	---	---	---	---	---	---	---	---	---
674*: Filiran-----	0-7	Very gravelly loam.	GM, GM-GC	A-1, A-2	0-5	45-60	35-50	30-40	20-30	15-25	NP-10
	7-12	Gravelly silt loam.	GM-GC, GC, SM-SC, SC	A-4, A-6	0-5	65-80	55-70	45-60	35-50	20-35	5-20
	12-33	Clay, silty clay loam, gravelly clay.	CL, CH	A-7	0	80-100	70-90	65-85	60-80	40-55	25-35
	33-60	Cemented-----	---	---	---	---	---	---	---	---	---
Buffaran-----	0-5	Extremely gravelly loam.	GC	A-2	0-5	30-45	15-25	10-20	10-15	25-35	10-15
	5-16	Gravelly clay, gravelly clay loam, clay.	CL, CH	A-7	0-5	75-90	70-85	65-80	50-65	40-55	20-30
	16-27	Indurated-----	---	---	---	---	---	---	---	---	---
	27-60	Cemented-----	---	---	---	---	---	---	---	---	---
675*: Filiran-----	0-7	Very gravelly loam.	GM, GM-GC	A-1, A-2	0-5	45-60	35-50	30-40	20-30	15-25	NP-10
	7-12	Gravelly silt loam.	GM-GC, GC, SM-SC, SC	A-4, A-6	0-5	65-80	55-70	45-60	35-50	20-35	5-20
	12-33	Clay, silty clay loam, gravelly clay.	CL, CH	A-7	0	80-100	70-90	65-85	60-80	40-55	25-35
	33-60	Cemented-----	---	---	---	---	---	---	---	---	---
Buffaran-----	0-5	Gravelly loam----	GC, SC	A-6	0-5	65-80	55-70	45-60	35-50	25-35	10-15
	5-16	Gravelly clay, gravelly clay loam, clay.	CL, CH	A-7	0-5	75-90	70-85	65-80	50-65	40-55	20-30
	16-27	Indurated-----	---	---	---	---	---	---	---	---	---
	27-60	Cemented-----	---	---	---	---	---	---	---	---	---
Orovada-----	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-65	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
680*: Skullwak-----	0-10	Silt loam-----	CL	A-6	0	100	100	90-100	85-100	30-40	10-20
	10-60	Stratified silty clay loam to silty clay.	CH, CL	A-7	0	100	100	95-100	90-100	40-60	20-40
Umberland-----	0-7	Silt loam-----	ML	A-4	0	100	100	95-100	60-80	25-35	NP-10
	7-60	Silty clay, silty clay loam.	CL, CH	A-7	0	100	100	90-100	85-95	40-55	20-30

See footnote at end of table.

## Lander County, Nevada, South Part

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct						
680*: Wendane-----	0-7	Silt loam-----	ML	A-4	0	100	100	90-100	70-95	30-40	NP-10
	7-18	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	70-80	30-40	NP-10
	18-60	Stratified silt loam to clay loam.	CL, ML	A-6, A-7	0	100	100	95-100	85-95	35-45	10-20
683*: Ocala-----	0-4	Silt loam-----	ML, CL	A-4, A-6	0	100	100	95-100	85-95	30-40	5-15
	4-36	Silt loam, silty clay loam.	ML, CL	A-6, A-7	0	100	100	95-100	85-95	30-50	10-20
	36-60	Silt loam, silty clay loam.	ML, CL	A-6, A-7	0	90-100	90-100	90-95	85-90	30-50	10-20
Sonoma-----	0-12	Silt loam-----	CL	A-6	0	100	100	95-100	75-90	30-35	10-15
	12-60	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	100	95-100	85-95	35-50	15-25
Paranat-----	0-11	Silt loam-----	ML	A-4	0	100	100	95-100	85-100	25-35	NP-10
	11-60	Silt loam, silty clay loam.	ML	A-4, A-6	0	100	100	95-100	90-100	30-40	5-15
700*: Orovada-----	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-26	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	26-61	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
Rasille-----	0-6	Silt loam-----	ML	A-4	0	100	100	95-100	85-100	20-30	NP-5
	6-15	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	75-100	20-30	NP-5
	15-60	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	75-100	20-30	NP-5
Wholan-----	0-6	Silt loam-----	ML	A-4	0	100	100	95-100	80-90	20-30	NP-5
	6-60	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	75-90	20-30	NP-5
701----- Orovada	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
702*: Orovada-----	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
702*: Creemon-----	0-10	Fine sandy loam	SM	A-4	0	100	100	80-95	35-50	15-20	NP-5
	10-15	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	15-45	Stratified very fine sandy loam to silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	45-60	Stratified gravelly very fine sandy loam to fine sandy loam.	SM	A-4	0	80-90	70-85	60-70	35-50	---	NP
703----- Orovada	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-65	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
704*: Orovada-----	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-65	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
McConnel-----	0-6	Gravelly fine sandy loam.	GM	A-2, A-4	0	60-70	50-70	40-60	25-45	15-25	NP-5
	6-12	Loam, sandy loam, fine sandy loam.	ML, SM	A-4	0	95-100	90-100	65-80	45-60	15-25	NP-5
	12-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP	A-1	0-15	25-35	10-35	5-15	0-5	---	NP
705*: Orovada-----	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-65	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
Valmy-----	0-3	Very fine sandy loam.	SM	A-4	0	90-100	85-100	60-75	35-50	15-25	NP-5
	3-43	Stratified very fine sandy loam to gravelly coarse sandy loam.	SM	A-4, A-2, A-1	0-5	80-95	75-90	40-70	20-45	15-25	NP-5
	43-66	Gravelly sand, very gravelly sand.	SP-SM, SM, GP-GM, GM	A-1	0-10	40-75	30-70	20-45	5-15	---	NP
740*. Playas											

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
751*: Poorcal-----	0-9	Loam-----	CL-ML	A-4	0	95-100	90-100	85-95	60-70	20-25	5-10
	9-30	Gravelly sandy loam, loam, gravelly loam.	SM-SC	A-2, A-4	0	65-90	55-85	40-60	20-50	15-25	5-10
	30-62	Very gravelly loamy sand, very gravelly sandy loam, very gravelly loam.	GM	A-1, A-2	0	45-60	40-50	15-40	10-35	---	NP
Lopwash-----	0-12	Loam-----	CL-ML, SM-SC	A-4	0	90-100	80-90	75-85	45-55	20-25	5-10
	12-60	Very gravelly coarse sandy loam, very gravelly sandy loam.	GM-GC	A-2	0	40-50	30-40	20-30	10-20	20-25	5-10
811*: Ravenswood-----	0-9	Gravelly loam----	GM-GC, SM-SC	A-2, A-4	0-15	60-75	55-70	45-65	30-45	25-30	5-10
	9-13	Very gravelly clay loam.	GC	A-2	5-15	45-60	35-50	30-45	20-35	40-50	15-25
	13-36	Very gravelly clay, very gravelly clay loam.	GC	A-2, A-7	5-15	45-60	35-50	30-45	25-40	40-55	20-30
	36	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Itca-----	0-2	Stony loam-----	CL, CL-ML	A-4, A-6	25-60	70-90	65-85	60-70	50-60	25-35	5-15
	2-14	Very cobbly clay loam, very gravelly clay, extremely gravelly clay.	CL, GC	A-7, A-2	0-55	40-80	30-75	25-70	20-60	40-50	15-25
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Walti-----	0-4	Cobbly loam-----	CL-ML	A-4	25-40	70-85	65-80	55-70	50-60	20-30	5-10
	4-10	Clay loam, gravelly clay loam.	CL	A-6	0-10	90-100	65-90	60-80	50-65	35-40	15-20
	10-30	Clay, gravelly clay.	CH, MH	A-7	0-10	90-100	65-90	60-80	50-75	55-65	25-35
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
812*: Ravenswood-----	0-9	Gravelly loam----	GM-GC, SM-SC	A-2, A-4	0-15	60-75	55-70	45-65	30-45	25-30	5-10
	9-13	Very gravelly clay loam.	GC	A-2	5-15	45-60	35-50	30-45	20-35	40-50	15-25
	13-36	Very gravelly clay, very gravelly clay loam.	GC	A-2, A-7	5-15	45-60	35-50	30-45	25-40	40-55	20-30
	36	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.



TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
812*: Shagnasty-----	0-15	Very cobbly loam	SC, SM-SC	A-6, A-4	40-60	70-85	55-70	50-65	35-50	25-35	5-15
	15-36	Clay, clay loam	CL, CH	A-7	5-10	90-100	85-95	75-90	60-75	40-60	20-35
	36-57	Cobbly clay loam, cobbly silty clay loam.	CL, CH, MH	A-7	15-25	70-90	65-85	55-80	50-70	40-55	15-25
	57-61	Weathered bedrock	---	---	---	---	---	---	---	---	---
Walti-----	0-4	Very cobbly loam	CL-ML, ML	A-4	30-40	75-90	65-80	55-70	50-60	20-30	NP-10
	4-10	Clay loam, gravelly clay loam.	CL	A-6	0-10	90-100	65-90	60-80	50-65	35-40	15-20
	10-30	Clay, gravelly clay.	CH, MH	A-7	0-10	90-100	65-90	60-80	50-75	55-65	25-35
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
850, 854----- Relley	0-8	Silt loam-----	CL-ML, ML	A-4	0	95-100	95-100	95-100	75-90	25-35	5-10
	8-16	Silt loam-----	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
	16-28	Silt loam-----	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
	28-60	Silt loam-----	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
910----- Rutab	0-8	Loam-----	ML	A-4	0	90-100	85-95	75-85	50-60	20-25	NP-5
	8-21	Very gravelly sandy loam, very gravelly loam, gravelly loam.	SM-SC, SM	A-2, A-4, A-1	0	65-90	35-75	30-50	15-45	15-25	NP-10
	21-60	Extremely gravelly sandy loam, extremely gravelly loamy sand, very gravelly sandy loam.	GP-GM	A-1	0	40-50	20-35	10-25	5-10	15-20	NP-5
931*: Shagnasty-----	0-15	Very cobbly loam	SC, SM-SC	A-6, A-4	40-60	70-85	55-70	50-65	35-50	25-35	5-15
	15-36	Clay, clay loam	CL, CH	A-7	5-10	90-100	85-95	75-90	60-75	40-60	20-35
	36-57	Cobbly clay loam, cobbly silty clay loam.	CL, CH, MH	A-7	15-25	70-90	65-85	55-80	50-70	40-55	15-25
	57-61	Weathered bedrock	---	---	---	---	---	---	---	---	---
Roca-----	0-4	Very cobbly loam	CL	A-6	50-60	85-100	75-85	70-80	50-60	25-35	10-15
	4-24	Very gravelly clay loam, very gravelly clay.	GC, SC	A-2	0-10	60-75	30-50	25-45	20-35	45-60	20-30
	24	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
932*: Shagnasty-----	0-15	Very cobbly loam	SC, SM-SC	A-6, A-4	40-60	70-85	55-70	50-65	35-50	25-35	5-15
	15-36	Clay, clay loam	CL, CH	A-7	5-10	90-100	85-95	75-90	60-75	40-60	20-35
	36-57	Cobbly clay loam, cobbly silty clay loam.	CL, CH, MH	A-7	15-25	70-90	65-85	55-80	50-70	40-55	15-25
	57-61	Weathered bedrock	---	---	---	---	---	---	---	---	---
Softscrabble----	0-16	Very cobbly fine sandy loam.	GM-GC, SM-SC	A-4	40-50	65-80	60-75	50-65	35-50	20-30	5-10
	16-30	Very cobbly clay loam.	GC	A-6, A-7	30-45	60-75	50-65	45-60	35-50	35-45	15-20
	30-60	Very gravelly clay loam.	GC	A-2, A-6, A-7	0-5	45-60	35-50	30-45	25-40	35-45	15-20
942----- Shipley	0-5	Silt loam-----	CL-ML, ML	A-4	0	100	100	90-100	65-80	20-30	NP-10
	5-41	Silt loam, very fine sandy loam.	CL-ML, ML	A-4	0	100	95-100	80-90	60-70	20-30	NP-10
	41-60	Very gravelly sand, extremely gravelly sand.	GP	A-1	5-10	40-50	25-40	15-30	0-5	---	NP
950----- Silverado	0-2	Sandy loam-----	SM	A-4	0	95-100	90-100	70-80	40-50	20-25	NP-5
	2-19	Sandy loam-----	SM	A-4	0	95-100	90-100	60-70	35-45	20-25	NP-5
	19-38	Gravelly sandy loam, sandy loam.	GM, SM	A-1	0	60-90	55-85	40-50	15-25	15-25	NP-5
	38-60	Very gravelly coarse sand.	GP	A-1	0	40-50	35-45	10-20	0-5	---	NP
990*: Sonoma-----	0-12	Silt loam-----	CL	A-6	0	95-100	95-100	85-100	70-90	30-35	10-15
	12-60	Stratified silt loam to silty clay loam.	CL, ML	A-6, A-7	0	100	100	100	95-100	35-50	10-25
Wendane-----	0-7	Silt loam-----	ML	A-4	0	100	100	90-100	70-95	30-40	NP-10
	7-18	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	70-80	30-40	NP-10
	18-60	Stratified silt loam to clay loam.	CL, ML	A-6, A-7	0	100	100	95-100	85-95	35-45	10-20
998*: Sonoma, frequently flooded-----	0-12	Silt loam-----	CL	A-6	0	100	100	85-100	70-90	30-35	10-15
	12-60	Stratified silt loam to silty clay loam.	CL, ML	A-6, A-7	0	100	100	100	95-100	35-50	10-25
Paranat-----	0-20	Silt loam-----	ML	A-4	0	100	100	95-100	85-100	25-35	NP-10
	20-48	Stratified silt loam to silty clay loam.	ML	A-4, A-6	0	100	100	95-100	90-100	30-40	5-15
	48-60	Stratified very fine sandy loam to silty clay.	ML	A-4, A-6	0	100	100	85-95	75-90	30-40	5-15

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct						
998*: Sonoma, occasionally flooded-----	0-12	Silt loam-----	CL	A-6	0	95-100	95-100	85-100	70-90	30-35	10-15
	12-60	Stratified silt loam to silty clay loam.	CL, ML	A-6, A-7	0	100	100	100	95-100	35-50	10-25
999*: Sonoma-----	0-12	Silt loam-----	CL	A-6	0	95-100	95-100	85-100	70-90	30-35	10-15
	12-60	Stratified silt loam to silty clay loam.	CL, ML	A-6, A-7	0	100	100	100	95-100	35-50	10-25
Wendane-----	0-7	Silt loam-----	ML	A-4	0	100	100	90-100	70-95	30-40	NP-10
	7-18	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	70-80	30-40	NP-10
	18-60	Stratified silt loam to clay loam.	CL, ML	A-6, A-7	0	100	100	95-100	85-95	35-45	10-20
Paranat-----	0-20	Silt loam-----	ML	A-4	0	100	100	95-100	85-100	25-35	NP-10
	20-48	Stratified silt loam to silty clay loam.	ML	A-4, A-6	0	100	100	95-100	90-100	30-40	5-15
	48-60	Stratified very fine sandy loam to silty clay.	ML	A-4, A-6	0	100	100	85-95	75-90	30-40	5-15
1011*: Stampede-----	0-10	Gravelly loam----	CL	A-6	0	70-80	65-75	60-70	50-65	25-35	10-15
	10-31	Clay, silty clay	CH	A-7	0-10	90-100	85-95	80-90	70-85	50-60	30-40
	31-60	Indurated-----	---	---	---	---	---	---	---	---	---
Handy-----	0-4	Gravelly loam----	SC	A-2, A-6	0-10	65-75	55-65	40-50	30-40	30-35	10-15
	4-30	Gravelly clay, clay.	CH, CL	A-7	0-10	70-100	60-100	60-75	50-70	45-55	30-35
	30-60	Stratified gravelly loam to very gravelly loamy sand.	GM	A-1, A-2	0-10	35-65	30-60	20-55	10-35	15-25	NP-5
Caniwe-----	0-17	Very fine sandy loam.	ML	A-4	0	100	100	95-100	65-80	15-25	NP-5
	17-60	Stratified silt loam to silty clay loam.	ML	A-4, A-7	0	100	100	95-100	85-95	30-50	5-15

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct						
1041*: Tenabo-----	0-4	Gravelly very fine sandy loam.	SM, GM	A-2, A-4	0-5	60-70	50-60	45-55	25-40	---	NP
	4-15	Silty clay loam, clay loam, gravelly clay loam.	CL	A-6	0	95-100	70-90	60-90	50-80	30-40	10-20
	15-28	Indurated-----	---	---	---	---	---	---	---	---	---
	28-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP-GM, GM	A-1	5-25	40-60	35-55	25-35	5-20	---	NP
Orovada-----	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-26	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	26-61	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
Buffaran-----	0-5	Gravelly loam----	GC, SC	A-6	0-5	65-80	55-70	45-60	35-50	25-35	10-15
	5-16	Gravelly clay, gravelly clay loam, clay.	CL, CH	A-7	0-5	75-90	70-85	65-80	50-65	40-55	20-30
	16-27	Indurated-----	---	---	---	---	---	---	---	---	---
	27-60	Cemented-----	---	---	---	---	---	---	---	---	---
1042*: Tenabo-----	0-4	Gravelly very fine sandy loam.	SM, GM	A-2, A-4	0-5	60-70	50-60	45-55	25-40	---	NP
	4-15	Silty clay loam, clay loam, gravelly clay loam.	CL	A-6	0	95-100	70-90	60-90	50-80	30-40	10-20
	15-28	Indurated-----	---	---	---	---	---	---	---	---	---
	28-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP-GM, GM	A-1	5-25	40-60	35-55	25-35	5-20	---	NP
Ricert-----	0-6	Very gravelly very fine sandy loam.	GM-GC	A-2	0-10	50-60	40-50	35-50	25-35	20-30	5-10
	6-18	Loam, clay loam	CL	A-6, A-7	0	90-100	85-100	80-90	70-80	35-45	15-20
	18-60	Very gravelly sandy loam, very gravelly loamy sand, extremely gravelly loamy sand.	GM, GP-GM	A-1	0-15	30-60	20-50	15-35	5-25	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
1042*: Desatoya-----	0-6	Gravelly fine sandy loam.	SM-SC	A-2, A-4	0-10	65-80	50-75	45-60	25-40	20-30	5-10
	6-13	Gravelly clay loam, gravelly clay.	GC	A-7	0-5	65-75	55-70	50-60	40-50	40-50	20-30
	13-60	Stratified extremely gravelly sandy loam to very gravelly loamy sand.	GM	A-1	25-35	35-50	25-45	15-30	10-15	15-25	NP-5
1092*: Tulase-----	0-6	Silt loam-----	CL-ML, ML	A-4	0	100	100	100	90-100	15-25	NP-10
	6-60	Very fine sandy loam, silt loam.	CL-ML, ML	A-4	0	100	100	95-100	70-85	15-25	NP-10
Bubus-----	0-6	Very fine sandy loam.	ML	A-4	0	85-95	75-90	70-80	50-60	25-30	NP-5
	6-60	Stratified sandy loam to silt loam.	ML	A-4	0	95-100	90-100	80-90	50-60	25-30	NP-5
McConnel-----	0-6	Loam-----	ML	A-4	0	95-100	85-95	70-80	50-60	15-25	NP-5
	6-12	Loam, sandy loam, fine sandy loam.	ML, SM	A-4	0	95-100	90-100	65-80	45-60	15-25	NP-5
	12-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP	A-1	0-15	25-35	10-35	5-15	0-5	---	NP
1131----- Fortank	0-6	Gravelly loam----	GM-GC, SM-SC	A-2, A-4	25-30	65-75	60-70	50-60	30-50	20-30	5-10
	6-30	Gravelly clay, gravelly clay loam.	GC, CL	A-7	0-10	65-85	55-75	45-65	40-60	40-50	20-30
	30-34	Weathered bedrock	---	---	---	---	---	---	---	---	---
1140----- Wendane	0-7	Silt loam-----	ML	A-4	0	100	100	90-100	70-95	30-40	NP-10
	7-18	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	70-80	30-40	NP-10
	18-60	Stratified silt loam to clay loam.	CL, ML	A-6, A-7	0	100	100	95-100	85-95	35-45	10-20
1141*: Wendane, strongly sodic	0-7	Silt loam-----	ML	A-4	0	100	100	90-100	70-95	30-40	NP-10
	7-18	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	70-80	30-40	NP-10
	18-60	Stratified silt loam to clay loam.	CL, ML	A-6, A-7	0	100	100	95-100	85-95	35-45	10-20

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
1141*: Wendane, frequently flooded-----	0-7	Silt loam-----	ML	A-4	0	100	100	90-100	70-95	30-40	NP-10
	7-18	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	70-80	30-40	NP-10
	18-60	Stratified silt loam to clay loam.	CL, ML	A-6, A-7	0	100	100	95-100	85-95	35-45	10-20
Umlerland-----	0-7	Silt loam-----	ML	A-4	0	100	100	95-100	60-80	25-35	NP-10
	7-60	Silty clay, silty clay loam, clay.	CL, CH	A-7	0	100	100	95-100	85-95	40-55	20-30
1142*: Wendane-----	0-7	Silt loam-----	ML	A-4	0	100	100	90-100	70-95	30-40	NP-10
	7-18	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	70-80	30-40	NP-10
	18-60	Stratified silt loam to clay loam.	CL, ML	A-6, A-7	0	100	100	95-100	85-95	35-45	10-20
Gund-----	0-4	Silt loam-----	CL-ML, ML	A-4	0	100	100	95-100	80-90	25-35	5-10
	4-23	Silt loam-----	CL-ML, CL	A-4, A-6	0	100	100	95-100	80-90	25-35	5-15
	23-60	Silty clay, clay	CH	A-7	0	100	100	95-100	85-95	50-60	25-35
Gund, drained---	0-4	Silt loam-----	CL-ML, ML	A-4	0	100	100	95-100	80-90	25-35	5-10
	4-23	Silt loam-----	CL-ML, CL	A-4, A-6	0	100	100	95-100	80-90	25-35	5-15
	23-60	Silty clay, clay	CH	A-7	0	100	100	95-100	85-95	50-60	25-35
1143----- Wendane	0-7	Silt loam-----	ML	A-4	0	100	100	90-100	70-95	30-40	NP-10
	7-18	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	70-80	30-40	NP-10
	18-60	Stratified silt loam to clay loam.	CL, ML	A-6, A-7	0	100	100	95-100	85-95	35-45	10-20
1145*: Wendane-----	0-7	Silt loam-----	ML	A-4	0	100	100	90-100	70-95	30-40	NP-10
	7-18	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	70-80	30-40	NP-10
	18-60	Stratified silt loam to clay loam.	CL, ML	A-6, A-7	0	100	100	95-100	85-95	35-45	10-20
Playas.											
1146*: Wendane-----	0-7	Silt loam-----	ML	A-4	0	100	100	90-100	70-95	30-40	NP-10
	7-18	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	70-80	30-40	NP-10
	18-60	Stratified silt loam to clay loam.	CL, ML	A-6, A-7	0	100	100	95-100	85-95	35-45	10-20
Sonoma-----	0-10	Silt loam-----	CL	A-6	0	95-100	95-100	85-100	70-90	30-35	10-15
	10-60	Stratified silt loam to silty clay loam.	CL, ML	A-6, A-7	0	100	100	100	95-100	35-50	10-25

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
1146*: Valmy-----	0-6	Very fine sandy loam.	SM	A-4	0	90-100	85-100	60-75	35-50	15-25	NP-5
	6-42	Stratified very fine sandy loam to gravelly coarse sandy loam.	SM	A-4, A-2, A-1	0-5	80-95	75-90	40-70	20-45	15-25	NP-5
	42-60	Gravelly sand, very gravelly sand.	SP-SM, SM, GP-GM, GM	A-1	0-10	40-75	30-70	20-45	5-15	---	NP
1148*: Wendane-----	0-7	Silt loam-----	ML	A-4	0	100	100	90-100	70-95	30-40	NP-10
	7-18	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	70-80	30-40	NP-10
	18-60	Stratified silt loam to clay loam.	CL, ML	A-6, A-7	0	100	100	95-100	85-95	35-45	10-20
Bubus-----	0-6	Very fine sandy loam.	ML	A-4	0	85-95	75-90	70-80	50-60	25-30	NP-5
	6-60	Stratified sandy loam to silt loam.	ML	A-4	0	95-100	90-100	80-90	50-60	25-30	NP-5
1169*: Whirlo-----	0-12	Gravelly very fine sandy loam.	ML, GM	A-4	0	60-75	55-75	50-70	40-60	---	NP
	12-24	Very gravelly fine sandy loam, very gravelly loam.	GM	A-1, A-2	0-5	45-55	35-50	30-40	15-35	---	NP
	24-60	Stratified very gravelly loam to extremely gravelly coarse sandy loam.	GW-GM, GP-GM	A-1	0-5	40-50	20-35	10-25	5-10	---	NP
Broyles-----	0-11	Very fine sandy loam.	ML	A-4	0	100	95-100	85-95	60-75	---	NP
	11-60	Stratified loam to gravelly loamy sand.	SM	A-2	0	70-100	60-95	30-40	25-35	---	NP
1173----- Wholan	0-6	Silt loam-----	ML	A-4	0	100	100	95-100	80-90	20-30	NP-5
	6-60	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	75-90	20-30	NP-5
1177*: Wholan-----	0-5	Very fine sandy loam.	ML	A-4	0	100	100	95-100	75-80	15-25	NP-5
	5-60	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	75-90	20-30	NP-5
Rasille-----	0-6	Silt loam-----	ML	A-4	0	100	100	95-100	85-100	20-30	NP-5
	6-15	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	75-100	20-30	NP-5
	15-60	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	75-100	20-30	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct						
1178*: Wholan-----	0-5	Silt loam-----	ML	A-4	0	100	100	95-100	80-90	20-30	NP-5
	5-60	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	75-90	20-30	NP-5
Rasille-----	0-6	Silt loam-----	ML	A-4	0	100	100	95-100	85-100	20-30	NP-5
	6-15	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	75-100	20-30	NP-5
	15-41	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	75-100	20-30	NP-5
	41-60	Stratified fine sandy loam to very gravelly coarse sand.	SM, GM	A-1	0	55-80	50-75	15-35	10-20	---	NP
1281*: Ricert-----	0-6	Gravelly silt loam.	SM-SC	A-4	0	75-85	55-75	40-55	35-50	20-30	5-10
	6-18	Loam, clay loam	CL	A-6, A-7	0	90-100	85-100	80-90	70-80	35-45	15-20
	18-60	Very gravelly sandy loam, very gravelly loamy sand, extremely gravelly loamy sand.	GM, GP-GM	A-1	0-15	30-60	20-50	15-35	5-25	---	NP
Whirlo-----	0-12	Fine sandy loam	ML, SM	A-4	0	80-95	75-85	65-80	45-60	20-25	NP-5
	12-24	Very gravelly fine sandy loam, very gravelly loam.	GM	A-1, A-2	0-5	45-55	35-50	30-40	15-35	---	NP
	24-60	Stratified very gravelly loam to extremely gravelly coarse sandy loam.	GW-GM, GP-GM	A-1	0-5	40-50	20-35	10-25	5-10	---	NP
Pineval-----	0-5	Gravelly fine sandy loam.	SM-SC	A-2	0	65-85	60-75	50-70	20-35	20-30	5-10
	5-11	Very gravelly clay loam, very gravelly loam, very gravelly sandy clay loam.	GC	A-2	0	35-60	25-50	20-40	15-35	30-40	10-15
	11-60	Stratified very gravelly sandy loam to extremely gravelly sand.	GP-GM, GM	A-1	0-25	30-60	20-50	15-40	5-20	---	NP
1282*: Ricert-----	0-6	Very fine sandy loam.	ML, CL-ML	A-4	0-5	90-100	90-100	80-95	55-70	15-25	NP-10
	6-18	Clay loam, loam	CL	A-6, A-7	0	90-100	85-100	80-90	70-80	35-45	15-20
	18-60	Very gravelly sandy loam, very gravelly loamy sand, extremely gravelly loamy sand.	GM, GP-GM	A-1	0-15	30-60	20-50	15-35	5-25	15-20	NP-5

See footnote at end of table.



TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
1282*: Broyles-----	0-13	Very fine sandy loam.	ML	A-4	0	100	95-100	85-95	60-75	---	NP
	13-60	Stratified loam to gravelly loamy sand.	SM	A-2	0	70-100	60-95	30-40	25-35	---	NP
1284*: Ricert-----	0-6	Very gravelly very fine sandy loam.	GM-GC	A-2	0-10	50-60	40-50	35-50	25-35	20-30	5-10
	6-18	Loam, clay loam	CL	A-6, A-7	0	90-100	85-100	80-90	70-80	35-45	15-20
	18-60	Very gravelly sandy loam, very gravelly loamy sand, extremely gravelly loamy sand.	GM, GP-GM	A-1	0-15	30-60	20-50	15-35	5-25	---	NP
Zineb-----	0-6	Very gravelly sandy loam.	SM-SC, GM-GC	A-2	0-10	40-65	25-55	20-45	10-25	20-30	5-10
	6-13	Gravelly loam, gravelly very fine sandy loam.	SM-SC, CL-ML	A-4	0-10	70-90	55-75	50-70	35-55	20-30	5-10
	13-19	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-10	30-60	25-55	20-45	10-25	15-25	NP-5
	19-27	Extremely cobbly sandy loam.	GP-GM, GM	A-1	50-75	20-50	15-45	10-30	5-20	15-25	NP-5
	27-60	Extremely cobbly coarse sand, extremely cobbly loamy coarse sand.	GP, GP-GM	A-1	50-75	20-50	15-45	5-25	0-10	---	NP
Pineval-----	0-5	Gravelly fine sandy loam.	SM-SC	A-2	0	65-85	60-75	50-70	20-35	20-30	5-10
	5-11	Very gravelly clay loam, very gravelly loam, very gravelly sandy clay loam.	GC	A-2	0	35-60	25-50	20-40	15-35	30-40	10-15
	11-60	Stratified very gravelly sandy loam to extremely gravelly sand.	GP-GM, GM	A-1	0-25	30-60	20-50	15-40	5-20	---	NP
1285*: Ricert-----	0-6	Gravelly silt loam.	SM-SC	A-4	0	75-85	55-75	40-55	35-50	20-30	5-10
	6-18	Loam, clay loam	CL	A-6, A-7	0	90-100	85-100	80-90	70-80	35-45	15-20
	18-60	Very gravelly sandy loam, very gravelly loamy sand, extremely gravelly loamy sand.	GM, GP-GM	A-1	0-15	30-60	20-50	15-35	5-25	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
1285*: Bubus-----	0-6	Very fine sandy loam.	ML	A-4	0	85-95	75-90	70-80	50-60	25-30	NP-5
	6-60	Stratified sandy loam to silt loam.	ML	A-4	0	95-100	90-100	80-90	50-60	25-30	NP-5
Broyles-----	0-13	Silt loam-----	ML	A-4	0	100	95-100	85-95	60-75	---	NP
	13-60	Stratified loam to gravelly loamy sand.	SM	A-2	0	70-100	60-95	30-40	25-35	---	NP
1286*: Ricert-----	0-6	Gravelly fine sandy loam.	SM, SM-SC	A-2, A-4	0	65-80	50-75	40-60	25-40	20-30	NP-10
	6-18	Loam, clay loam	CL	A-6, A-7	0	90-100	85-100	80-90	70-80	35-45	15-20
	18-60	Very gravelly sandy loam, very gravelly loamy sand, extremely gravelly loamy sand.	GM, GP-GM	A-1	0-15	30-60	20-50	15-35	5-25	---	NP
Tenabo-----	0-4	Gravelly very fine sandy loam.	SM, GM	A-2, A-4	0-5	60-70	50-60	45-55	25-40	---	NP
	4-15	Silty clay loam, clay loam, gravelly clay loam.	CL	A-6	0	95-100	70-90	60-90	50-80	30-40	10-20
	15-28	Indurated-----	---	---	---	---	---	---	---	---	---
	28-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP-GM, GM	A-1	5-25	40-60	35-55	25-35	5-20	---	NP
Broyles-----	0-13	Very fine sandy loam.	ML	A-4	0	100	95-100	85-95	60-75	---	NP
	13-60	Stratified loam to gravelly loamy sand.	SM	A-2	0	70-100	60-95	30-40	25-35	---	NP
1287*: Ricert-----	0-7	Very gravelly very fine sandy loam.	GM-GC	A-2	0-10	50-60	40-50	35-50	25-35	20-30	5-10
	7-20	Loam, clay loam	CL	A-6, A-7	0	90-100	85-100	80-90	70-80	35-45	15-20
	20-60	Very gravelly sandy loam, very gravelly loamy sand, extremely gravelly loamy sand.	GM, GP-GM	A-1	0-15	30-60	20-50	15-35	5-25	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
1287*:											
Orovada-----	0-8	Gravelly very fine sandy loam.	GM, SM	A-2, A-4	0	60-80	55-75	45-70	30-50	15-25	NP-5
	8-20	Fine sandy loam, loam, very fine sandy loam.	SM, ML	A-4	0	75-100	75-95	60-85	40-70	20-30	NP-5
	20-65	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
Broyles-----	0-13	Gravelly very fine sandy loam.	SM, GM	A-4	0	65-85	60-75	55-70	35-50	---	NP
	13-60	Stratified loam to gravelly loamy sand.	SM	A-2, A-4	0	70-100	60-95	30-50	25-45	---	NP
1288*:											
Ricert-----	0-6	Gravelly fine sandy loam.	SM, SM-SC	A-2, A-4	0	65-80	50-75	40-60	25-40	20-30	NP-10
	6-18	Loam, clay loam	CL	A-6, A-7	0	90-100	85-100	80-90	70-80	35-45	15-20
	18-60	Very gravelly sandy loam, very gravelly loamy sand, extremely gravelly loamy sand.	GM, GP-GM	A-1	0-15	30-60	20-50	15-35	5-25	---	NP
Orovada-----	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-65	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
Tenabo-----	0-4	Very fine sandy loam.	ML	A-4	0	95-100	90-100	85-95	75-85	25-35	NP-10
	4-15	Clay loam, silty clay loam, gravelly clay loam.	CL	A-6	0	95-100	70-95	60-90	50-85	30-40	15-25
	15-28	Indurated-----	---	---	---	---	---	---	---	---	---
	28-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP-GM, GM	A-1	5-25	40-60	35-55	25-35	5-20	---	NP
1289*:											
Ricert-----	0-6	Gravelly fine sandy loam.	SM, SM-SC	A-2, A-4	0	65-80	50-75	40-60	25-40	20-30	NP-10
	6-18	Loam, clay loam	CL	A-6, A-7	0	90-100	85-100	80-90	70-80	35-45	15-20
	18-60	Very gravelly sandy loam, very gravelly loamy sand, extremely gravelly loamy sand.	GM, GP-GM	A-1	0-15	30-60	20-50	15-35	5-25	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
1289*: Blackhawk-----	0-3	Very fine sandy loam.	ML	A-4	0	95-100	95-100	85-95	65-75	---	NP
	3-14	Silt loam, loam, very fine sandy loam.	ML	A-4	0	95-100	95-100	85-95	70-80	30-35	NP-5
	14-30	Cemented-----	---	---	---	---	---	---	---	---	---
	30-48	Stratified loam to gravelly coarse sand.	SM	A-1, A-2	0	75-90	70-85	35-50	10-30	---	NP
	48-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP-GM, SP, GP, SP-SM	A-1	0	45-60	20-50	10-35	0-10	---	NP
Orovada-----	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-65	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
1371*: Chad-----	0-17	Cobbly loam-----	SM-SC, CL-ML	A-4	15-25	70-80	65-75	40-60	35-55	20-30	5-10
	17-42	Gravelly clay, gravelly clay loam, clay.	CL, MH, SM, SC	A-7	0-5	75-95	55-85	45-75	40-65	40-55	15-25
	42-50	Weathered bedrock	---	---	---	---	---	---	---	---	---
Gando-----	0-4	Very gravelly loam.	GM-GC, GM	A-2, A-1	0-5	40-60	25-50	20-35	15-30	20-30	NP-10
	4-10	Extremely gravelly loam, very gravelly loam, extremely gravelly sandy loam.	GM	A-2, A-1	0-30	30-40	20-35	15-30	10-25	20-35	NP-10
	10-14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Softscrabble----	0-14	Fine sandy loam	SM-SC, CL-ML	A-4	5-15	85-100	80-100	60-80	35-65	20-30	5-10
	14-27	Extremely gravelly clay loam, very gravelly clay loam.	GC	A-2	10-25	35-60	30-55	25-45	20-35	35-45	15-20
	27-60	Very gravelly loam, very gravelly clay loam, extremely gravelly loam.	GC, GM	A-2	10-25	35-60	30-55	25-45	20-35	30-40	5-15

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
1450*:											
Atlow, steep----	0-3	Very gravelly loam.	GC, SC	A-2, A-6	0-15	35-85	30-50	20-45	15-40	25-35	10-15
	3-14	Very gravelly clay loam, very cobbly clay loam.	GC	A-2, A-6, A-7	0-45	35-60	25-50	20-50	15-40	35-45	15-20
	14-18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Atlow, strongly sloping-----	0-3	Very gravelly loam.	GC, SC	A-2, A-6	0-15	35-85	30-50	20-45	15-40	25-35	10-15
	3-14	Very gravelly clay loam, very cobbly clay loam.	GC	A-2, A-6, A-7	0-45	35-60	25-50	20-50	15-40	35-45	15-20
	14-18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Stingdorn-----	0-7	Cobbly loam-----	SM-SC	A-4	25-40	85-95	75-90	55-80	40-50	20-30	5-10
	7-15	Very cobbly clay loam.	GC	A-6	30-50	60-75	50-65	45-60	35-50	35-40	15-20
	15-20	Indurated-----	---	---	---	---	---	---	---	---	---
	20	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1600*. Dumps and pits											
1670*:											
Wieland-----	0-8	Loam-----	CL-ML, ML	A-4	0	90-100	75-100	70-90	50-75	20-30	NP-10
	8-20	Gravelly clay----	CH, SC	A-7	0-5	75-95	55-75	50-70	45-65	50-60	25-35
	20-60	Loam, gravelly loam, gravelly sandy loam.	CL-ML, SM-SC	A-4, A-2	0-5	65-95	55-90	40-85	25-70	20-30	5-10
Allor-----	0-12	Very cobbly loam	SM-SC, GM-GC	A-2, A-4	30-50	60-75	45-70	40-65	30-45	20-30	5-10
	12-34	Gravelly clay loam, gravelly sandy clay loam.	SC	A-6, A-7	0-10	70-85	55-75	45-65	35-50	35-45	15-20
	34-60	Gravelly loamy sand, very gravelly loamy sand.	SM	A-1	0-10	55-75	45-65	30-50	10-20	---	NP
1680----- Zineb	0-6	Gravelly loam----	SM-SC, CL-ML	A-4	0-10	70-90	55-75	50-70	35-55	20-30	5-10
	6-13	Gravelly loam, gravelly very fine sandy loam.	SM-SC, CL-ML	A-4	0-10	70-90	55-75	50-70	35-55	20-30	5-10
	13-19	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-10	30-60	25-55	20-45	10-25	15-25	NP-5
	19-27	Extremely cobbly sandy loam.	GP-GM, GM	A-1	50-75	20-50	15-45	10-30	5-20	15-25	NP-5
	27-60	Extremely cobbly coarse sand, extremely cobbly loamy coarse sand.	GP, GP-GM	A-1	50-75	20-50	15-45	5-25	0-10	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
1681*: Zineb-----	0-6	Gravelly loam----	SM-SC, CL-ML	A-4	0-10	70-90	55-75	50-70	35-55	20-30	5-10
	6-13	Gravelly loam, gravelly very fine sandy loam.	SM-SC, CL-ML	A-4	0-10	70-90	55-75	50-70	35-55	20-30	5-10
	13-19	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-10	30-60	25-55	20-45	10-25	15-25	NP-5
	19-27	Extremely cobbly sandy loam.	GP-GM, GM	A-1	50-75	20-50	15-45	10-30	5-20	15-25	NP-5
	27-60	Extremely cobbly coarse sand, extremely cobbly loamy coarse sand.	GP, GP-GM	A-1	50-75	20-50	15-45	5-25	0-10	---	NP
Chiara-----	0-4	Gravelly loam----	SM	A-4	0-5	70-80	55-70	50-65	35-50	15-25	NP-5
	4-13	Very fine sandy loam, silt loam, loam.	ML	A-4	0	95-100	95-100	95-100	75-85	15-25	NP-5
	13-60	Indurated-----	---	---	---	---	---	---	---	---	---
Wieland-----	0-5	Gravelly loam----	GC, CL, SC	A-6	0-5	60-85	50-75	45-70	35-60	25-35	10-15
	5-26	Gravelly clay, clay.	CH, SC	A-7	0-5	75-95	55-90	50-80	45-75	50-60	25-35
	26-52	Gravelly sandy clay loam, gravelly clay loam.	GC, SC	A-6, A-2	0-5	60-85	50-70	40-70	25-50	35-40	15-20
	52-60	Loam, gravelly loam, gravelly sandy loam.	CL-ML, SM-SC	A-4, A-2	0-5	65-95	55-90	40-85	25-70	20-30	5-10
1682*: Zineb-----	0-6	Very gravelly sandy loam.	SM-SC, GM-GC	A-2	0-10	40-65	25-55	20-45	10-25	20-30	5-10
	6-13	Gravelly loam, gravelly very fine sandy loam.	SM-SC, CL-ML	A-4	0-10	70-90	55-75	50-70	35-55	20-30	5-10
	13-19	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-10	30-60	25-55	20-45	10-25	15-25	NP-5
	19-27	Extremely cobbly sandy loam.	GP-GM, GM	A-1	50-75	20-50	15-45	10-30	5-20	15-25	NP-5
	27-60	Extremely cobbly coarse sand, extremely cobbly loamy coarse sand.	GP, GP-GM	A-1	50-75	20-50	15-45	5-25	0-10	---	NP
Orovada-----	0-8	Gravelly fine sandy loam.	GM, SM	A-2, A-4	0	60-80	55-75	50-70	25-40	---	NP
	8-20	Fine sandy loam, loam, very fine sandy loam.	SM, ML	A-4	0	75-100	75-95	60-85	40-70	20-30	NP-5
	20-65	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2003*: Unius-----	0-4	Gravelly silt loam.	CL	A-6	0	85-100	65-75	60-70	55-65	25-35	10-15
	4-12	Silt loam, loam, gravelly loam.	CL, GC	A-6	0	65-100	60-100	55-80	45-70	25-35	10-15
	12-44	Cemented-----	---	---	---	---	---	---	---	---	---
	44-60	Gravelly loamy sand.	SM	A-1	0	60-80	55-75	20-30	10-20	---	NP
Orovada-----	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-26	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	26-61	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
2010*: Glyphs-----	0-7	Fine sandy loam	CL-ML, SM-SC	A-4	0	95-100	85-95	75-85	45-60	25-30	5-10
	7-17	Gravelly sandy clay loam, gravelly clay loam.	CL, SC	A-6, A-7	0	80-90	60-75	55-65	40-55	35-45	15-20
	17-37	Gravelly sandy loam.	SM-SC, GM-GC	A-2	0	60-80	55-75	40-55	20-30	20-25	5-10
	37-60	Very gravelly coarse sand.	GP, GP-GM, SP, SP-SM	A-1	0-5	40-65	35-45	15-25	0-10	---	NP
Silverado-----	0-2	Gravelly sandy loam.	SM	A-2	0	65-80	60-75	45-60	25-35	20-25	NP-5
	2-19	Sandy loam-----	SM	A-4	0	95-100	90-100	60-70	35-45	20-25	NP-5
	19-38	Gravelly sandy loam, sandy loam.	GM, SM	A-1	0	60-90	55-85	40-50	15-25	15-25	NP-5
	38-60	Very gravelly coarse sand.	GP	A-1	0	40-50	35-45	10-20	0-5	---	NP
2011*: Glyphs-----	0-7	Fine sandy loam	CL-ML, SM-SC	A-4	0	95-100	85-95	75-85	45-60	25-30	5-10
	7-17	Gravelly sandy clay loam, gravelly clay loam.	CL, SC	A-6, A-7	0	80-90	60-75	55-65	40-55	35-45	15-20
	17-37	Gravelly sandy loam.	SM-SC, GM-GC	A-2	0	60-80	55-75	40-55	20-30	20-25	5-10
	37-60	Very gravelly coarse sand.	GP, GP-GM, SP, SP-SM	A-1	0-5	40-65	35-45	15-25	0-10	---	NP
Muni-----	0-3	Fine sandy loam	SM-SC	A-4	0	90-100	85-95	75-90	35-50	20-25	5-10
	3-18	Sandy clay loam, clay loam, loam.	CL	A-6	0	90-100	85-95	70-80	50-60	30-40	10-20
	18-49	Cemented-----	---	---	---	---	---	---	---	---	---
	49-60	Very gravelly loamy sand.	GM, SM	A-1	0-10	50-65	35-55	20-30	10-20	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2012*: Glyphs-----	0-7	Fine sandy loam	CL-ML, SM-SC	A-4	0	95-100	85-95	75-85	45-60	25-30	5-10
	7-17	Gravelly sandy clay loam, gravelly clay loam.	CL, SC	A-6, A-7	0	80-90	60-75	55-65	40-55	35-45	15-20
	17-37	Gravelly sandy loam.	SM-SC, GM-GC	A-2	0	60-80	55-75	40-55	20-30	20-25	5-10
	37-60	Very gravelly coarse sand.	GP, GP-GM, SP, SP-SM	A-1	0-5	40-65	35-45	15-25	0-10	---	NP
Muni-----	0-3	Fine sandy loam	SM-SC	A-4	0	90-100	85-95	75-90	35-50	20-25	5-10
	3-18	Sandy clay loam, clay loam, loam.	CL	A-6	0	90-100	85-95	70-80	50-60	30-40	10-20
	18-49	Cemented-----	---	---	---	---	---	---	---	---	---
	49-60	Very gravelly loamy sand.	GM, SM	A-1	0-10	50-65	35-55	20-30	10-20	---	NP
Orovada-----	0-5	Fine sandy loam	SM-SC, SM	A-4	0	90-100	85-95	75-90	35-50	20-30	NP-10
	5-15	Fine sandy loam, loam, silt loam.	CL-ML, ML	A-4	0	90-100	85-100	75-90	50-70	20-30	NP-10
	15-40	Fine sandy loam	SM-SC, SM	A-2, A-4	0	90-100	80-95	70-85	30-45	20-30	NP-10
	40-60	Stratified gravelly sandy loam to very gravelly sand.	SP-SM, SM	A-1	0-5	75-90	45-60	30-45	5-15	---	NP
2015*: Glyphs, gently sloping-----	0-7	Fine sandy loam	CL-ML, SM-SC	A-4	0	95-100	85-95	75-85	45-60	25-30	5-10
	7-17	Gravelly sandy clay loam, gravelly clay loam.	CL, SC	A-6, A-7	0	80-90	60-75	55-65	40-55	35-45	15-20
	17-37	Gravelly sandy loam.	SM-SC, GM-GC	A-2	0	60-80	55-75	40-55	20-30	20-25	5-10
	37-60	Very gravelly coarse sand.	GP, GP-GM, SP, SP-SM	A-1	0-5	40-65	35-45	15-25	0-10	---	NP
Glyphs, moderately steep-----	0-7	Fine sandy loam	CL-ML, SM-SC	A-4	0	95-100	85-95	75-85	45-60	25-30	5-10
	7-17	Gravelly sandy clay loam, gravelly clay loam.	CL, SC	A-6, A-7	0	80-90	60-75	55-65	40-55	35-45	15-20
	17-37	Gravelly sandy loam.	SM-SC, GM-GC	A-2	0	60-80	55-75	40-55	20-30	20-25	5-10
	37-60	Very gravelly coarse sand.	GP, GP-GM, SP, SP-SM	A-1	0-5	40-65	35-45	15-25	0-10	---	NP
Enko-----	0-4	Gravelly loamy sand.	SM	A-1, A-2	0	65-85	50-70	25-45	15-30	15-25	NP-5
	4-18	Sandy loam, loam, fine sandy loam.	SM-SC, CL-ML	A-4	0	95-100	85-100	60-90	35-70	20-30	5-10
	18-60	Sandy loam, fine sandy loam, loam.	SM, ML	A-2, A-4	0	95-100	85-100	60-90	30-65	15-20	NP-5

See footnote at end of table.



TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2021*:											
Rotinom-----	0-9	Silt loam-----	ML	A-4	0	95-100	95-100	95-100	75-90	30-40	5-10
	9-60	Silt loam-----	ML	A-4, A-5	0	95-100	95-100	95-100	75-90	35-45	5-10
Wholan-----	0-6	Very fine sandy loam.	ML	A-4	0	100	100	95-100	75-80	15-25	NP-5
	6-60	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	75-90	20-30	NP-5
Wholan, alkaline-----	0-6	Very fine sandy loam.	ML	A-4	0	100	100	95-100	75-80	15-25	NP-5
	6-60	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	75-90	20-30	NP-5
2022*:											
Rotinom-----	0-9	Silt loam-----	ML	A-4	0	95-100	95-100	95-100	75-90	30-40	5-10
	9-60	Silt loam-----	ML	A-4, A-5	0	95-100	95-100	95-100	75-90	35-45	5-10
Orovada-----	0-8	Very fine sandy loam.	ML	A-4	0	95-100	90-100	80-95	60-75	25-35	NP-5
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-65	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
2031*:											
Muni-----	0-3	Fine sandy loam	SM-SC	A-4	0	90-100	85-95	75-90	35-50	20-25	5-10
	3-18	Sandy clay loam, clay loam, loam.	CL	A-6	0	90-100	85-95	70-80	50-60	30-40	10-20
	18-49	Cemented-----	---	---	---	---	---	---	---	---	---
	49-60	Very gravelly loamy sand.	GM, SM	A-1	0-10	50-65	35-55	20-30	10-20	---	NP
Orovada-----	0-5	Fine sandy loam	SM-SC, SM	A-4	0	90-100	85-95	75-90	35-50	20-30	NP-10
	5-15	Fine sandy loam, loam, silt loam.	CL-ML, ML	A-4	0	90-100	85-100	75-90	50-70	20-30	NP-10
	15-40	Fine sandy loam	SM-SC, SM	A-2, A-4	0	90-100	80-95	70-85	30-45	20-30	NP-10
	40-60	Stratified gravelly sandy loam to very gravelly sand.	SP-SM, SM	A-1	0-5	75-90	45-60	30-45	5-15	---	NP
Unius-----	0-4	Gravelly silt loam.	CL	A-6	0	85-100	65-75	60-70	55-65	25-35	10-15
	4-12	Silt loam, loam, gravelly loam.	CL, GC	A-6	0	65-100	60-100	55-80	45-70	25-35	10-15
	12-44	Cemented-----	---	---	---	---	---	---	---	---	---
	44-60	Gravelly loamy sand.	SM	A-1	0	60-80	55-75	20-30	10-20	---	NP
2060*:											
Oxcorel-----	0-5	Gravelly very fine sandy loam.	SM, GM	A-4	0-10	60-85	55-75	45-70	35-50	15-25	NP-5
	5-34	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	34-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2060*: Beoska-----	0-9	Silt loam-----	ML	A-4	0	85-95	75-85	70-80	55-70	30-35	NP-5
	9-18	Silt loam, silty clay loam, clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	18-60	Stratified gravelly very fine sandy loam to gravelly sandy loam.	GM, SM	A-1, A-2	0-10	55-80	50-75	30-50	20-35	15-25	NP-5
Whirlo-----	0-12	Gravelly loam----	ML, GM	A-4	0	60-75	55-75	50-70	40-60	---	NP
	12-24	Very gravelly fine sandy loam, very gravelly loam.	GM	A-1, A-2	0-5	45-55	35-50	30-40	15-35	---	NP
	24-60	Stratified very gravelly loam to extremely gravelly coarse sandy loam.	GW-GM, GP-GM	A-1	0-5	40-50	20-35	10-25	5-10	---	NP
2061*: Oxcorel-----	0-8	Gravelly sandy loam.	SM-SC, GM-GC	A-2, A-4	0-10	60-85	55-75	40-60	25-40	25-30	5-10
	8-34	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	34-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5
Zaidy-----	0-5	Very gravelly sandy loam.	GM-GC, GM	A-2, A-1	10-15	50-65	40-55	25-40	15-30	20-30	NP-10
	5-25	Loam, clay loam, gravelly clay loam.	SC, CL	A-6	0	75-90	60-85	55-70	45-60	30-40	10-15
	25-60	Cemented-----	---	---	---	---	---	---	---	---	---
Grassval-----	0-4	Very gravelly sandy loam.	GM-GC	A-2	5-10	45-60	35-50	25-45	15-30	20-25	5-10
	4-13	Gravelly clay loam, gravelly loam.	GC	A-6	0-10	65-75	55-70	50-65	35-50	30-40	15-20
	13	Indurated-----	---	---	---	---	---	---	---	---	---
2063*: Oxcorel-----	0-8	Gravelly very fine sandy loam.	SM, GM	A-4	0-10	60-85	55-75	45-70	35-50	15-25	NP-5
	8-34	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	34-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct						
2063*: Pineval, moderately steep-----	0-5	Gravelly loam----	CL-ML, GM-GC	A-4	0	65-85	60-75	45-65	40-55	20-30	5-10
	5-11	Very gravelly clay loam, very gravelly loam, very gravelly sandy clay loam.	GC	A-2	0	35-60	25-50	20-40	15-35	30-40	10-15
	11-60	Stratified very gravelly sandy loam to extremely gravelly sand.	GP-GM, GM	A-1	0-25	30-60	20-50	15-40	5-20	---	NP
Pineval, strongly sloping-----	0-5	Gravelly loam----	CL-ML, GM-GC	A-4	0	65-85	60-75	45-65	40-55	20-30	5-10
	5-11	Very gravelly clay loam, very gravelly loam, very gravelly sandy clay loam.	GC	A-2	0	35-60	25-50	20-40	15-35	30-40	10-15
	11-60	Stratified very gravelly sandy loam to extremely gravelly sand.	GP-GM, GM	A-1	0-25	30-60	20-50	15-40	5-20	---	NP
2069*: Oxcorel-----	0-6	Gravelly very fine sandy loam.	SM, GM	A-4	0-10	60-85	55-75	45-70	35-50	15-25	NP-5
	6-37	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	37-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5
Wieland-----	0-8	Gravelly loam----	GC, CL, SC	A-6	0-5	60-85	50-75	45-70	35-60	25-35	10-15
	8-20	Gravelly clay, clay.	CH, SC	A-7	0-5	75-95	55-90	50-80	45-75	50-60	25-35
	20-25	Gravelly sandy clay loam, gravelly clay loam.	GC, SC	A-6, A-2	0-5	60-85	50-70	40-70	25-50	35-40	15-20
	25-60	Loam, gravelly loam, gravelly sandy loam.	CL-ML, SM-SC	A-4, A-2	0-5	65-95	55-90	40-85	25-70	20-30	5-10
Spasprey-----	0-5	Gravelly fine sandy loam.	SM, SM-SC	A-1, A-2	0-5	70-90	55-70	45-60	20-35	15-25	NP-10
	5-26	Loam, clay loam, sandy clay loam.	CL, SC	A-6	0-5	95-100	90-100	70-95	45-65	30-40	10-20
	26-33	Cemented-----	---	---	---	---	---	---	---	---	---
	33-60	Fine sandy loam, sandy loam, loamy sand.	SM	A-2	0	90-100	85-95	50-65	15-30	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct						
2081*: Fenster-----	0-5	Silt loam-----	ML, CL	A-4, A-6	0	100	100	95-100	70-90	30-40	5-15
	5-10	Silt loam, silty clay loam.	ML, CL	A-4, A-6, A-7	0	100	100	95-100	80-100	30-45	5-20
	10-60	Silt loam, silty clay loam.	ML, CL	A-4, A-6, A-7	0	100	100	95-100	75-100	30-45	5-20
Jesse Camp-----	0-4	Silt loam-----	ML	A-4	0	100	100	90-100	65-80	25-35	NP-10
	4-12	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	70-85	25-35	NP-10
	12-60	Silt loam-----	ML	A-4, A-6	0	100	100	95-100	75-85	30-40	5-15
2088*: Punchbowl-----	0-3	Very gravelly loam.	GM	A-1, A-2	5-10	45-60	35-50	30-45	20-35	15-25	NP-5
	3-7	Loam, gravelly loam.	SC, CL, GC	A-6	0-5	70-100	65-95	60-85	45-55	25-35	10-15
	7-11	Gravelly clay loam, gravelly sandy clay loam.	GC	A-6, A-7	0-5	55-65	50-60	45-55	35-45	35-45	15-20
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Jung-----	0-8	Very gravelly loam.	GM	A-1, A-2	0-10	50-60	35-50	25-45	20-35	20-25	NP-5
	8-19	Very cobbly clay loam, very cobbly clay, very gravelly clay loam.	GC	A-7	15-40	55-65	50-60	40-50	35-45	40-55	20-30
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Teguro-----	0-6	Very gravelly loam.	GM	A-1, A-2, A-4	10-35	30-55	25-50	20-45	15-40	15-25	NP-5
	6-16	Gravelly clay loam, gravelly loam.	SC	A-2, A-6	0-10	65-80	50-75	35-60	30-50	30-40	15-20
	16-20	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2089*: Punchbowl-----	0-3	Very gravelly loam.	GM	A-1, A-2	5-10	45-60	35-50	30-45	20-35	15-25	NP-5
	3-7	Loam, gravelly loam.	SC, CL, GC	A-6	0-5	70-100	65-95	60-85	45-55	25-35	10-15
	7-11	Gravelly clay loam, gravelly sandy clay loam.	GC	A-6, A-7	0-5	55-65	50-60	45-55	35-45	35-45	15-20
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Jung-----	0-8	Very gravelly loam.	GM	A-1, A-2	0-10	50-60	35-50	25-45	20-35	20-25	NP-5
	8-19	Very cobbly clay loam, very cobbly clay, very gravelly clay loam.	GC	A-7	15-40	55-65	50-60	40-50	35-45	40-55	20-30
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2089*: Locane-----	0-6	Very gravelly loam.	GM-GC	A-2	5-15	50-65	30-45	25-40	15-30	20-30	5-10
	6-14	Very gravelly clay loam.	GC	A-2, A-7, A-6	0-10	50-65	35-50	30-45	25-40	35-45	15-20
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2090----- Punchbowl	0-3	Gravelly loam----	SM	A-2, A-4	5-10	65-85	60-75	45-60	30-45	15-25	NP-5
	3-7	Loam, gravelly loam.	SC, GC, CL	A-6	0-5	70-100	65-95	60-85	45-55	25-35	10-15
	7-11	Gravelly clay loam, gravelly sandy clay loam.	GC	A-6, A-7	0-5	55-65	50-60	45-55	35-45	35-45	15-20
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2091*: Punchbowl-----	0-3	Very gravelly loam.	GM	A-1, A-2	5-10	45-60	35-50	30-45	20-35	15-25	NP-5
	3-7	Loam, gravelly loam.	SC, CL, GC	A-6	0-5	70-100	65-95	60-85	45-55	25-35	10-15
	7-11	Gravelly clay loam, gravelly sandy clay loam.	GC	A-6, A-7	0-5	55-65	50-60	45-55	35-45	35-45	15-20
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Teguro-----	0-4	Very gravelly loam.	GM	A-1, A-2	0-5	40-55	35-50	30-45	20-35	15-25	NP-5
	4-16	Gravelly clay loam, gravelly loam.	SC	A-2, A-6	0-10	65-80	50-75	35-60	30-50	30-40	15-20
	16-20	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Sumine-----	0-10	Very gravelly loam.	GM-GC	A-2, A-4	10-15	50-65	45-60	40-50	30-40	20-30	5-10
	10-30	Very gravelly clay loam, very cobbly clay loam, very gravelly loam.	GC	A-2, A-6, A-7	15-40	45-70	35-65	30-50	25-45	35-45	15-25
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2092*: Punchbowl-----	0-3	Gravelly loam----	SM	A-2, A-4	5-10	65-85	60-75	45-60	30-45	15-25	NP-5
	3-7	Loam, gravelly loam.	SC, GC, CL	A-6	0-5	70-100	65-95	60-85	45-55	25-35	10-15
	7-11	Gravelly clay loam, gravelly sandy clay loam.	GC	A-6, A-7	0-5	55-65	50-60	45-55	35-45	35-45	15-20
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Belate-----	0-14	Very gravelly loam.	GM-GC	A-2	5-15	50-65	35-50	30-40	25-35	20-25	5-10
	14-60	Very gravelly clay loam, very gravelly loam.	GC	A-2, A-6	5-10	50-65	35-50	35-45	30-40	25-35	10-15

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2092*: Reluctan-----	0-8	Very gravelly loam.	GM-GC	A-2, A-4	10-25	35-65	30-55	25-55	20-40	25-30	5-10
	8-33	Gravelly clay loam, gravelly loam.	GC, CL	A-6, A-7	0-15	65-85	60-75	55-75	40-60	35-45	15-20
	33-37	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2093*: Punchbowl-----	0-3	Loam-----	SM, ML	A-4	0-5	85-100	80-90	60-75	45-60	15-25	NP-5
	3-7	Loam, gravelly loam.	CL, SC, GC	A-6	0-5	70-100	65-95	60-85	45-55	25-35	10-15
	7-11	Gravelly clay loam, gravelly sandy clay loam.	GC	A-6, A-7	0-5	55-65	50-60	45-55	35-45	35-45	15-20
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
2094*: Punchbowl-----	0-3	Gravelly loam----	SM	A-2, A-4	5-10	65-85	60-75	45-60	30-45	15-25	NP-5
	3-7	Loam, gravelly loam.	SC, GC, CL	A-6	0-5	70-100	65-95	60-85	45-55	25-35	10-15
	7-11	Gravelly clay loam, gravelly sandy clay loam.	GC	A-6, A-7	0-5	55-65	50-60	45-55	35-45	35-45	15-20
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Simpark-----	0-13	Very cobbly loam	SM-SC	A-2, A-4	40-55	65-80	50-70	45-60	25-40	20-25	5-10
	13-18	Very cobbly loam, very gravelly loam.	GC, SC	A-2, A-6	10-40	60-75	30-65	25-55	20-45	25-35	10-15
	18-22	Indurated-----	---	---	---	---	---	---	---	---	---
	22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Akerue-----	0-3	Very cobbly loam	SM-SC	A-4	30-40	75-80	55-65	50-60	40-50	25-30	5-10
	3-15	Very cobbly clay loam, very cobbly clay.	GC, SC, CL	A-7	40-55	60-85	50-80	45-65	35-55	40-50	15-25
	15-21	Indurated-----	---	---	---	---	---	---	---	---	---
	21-25	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2095*: Punchbowl-----	0-3	Cobbly loam-----	SM, ML	A-4	25-40	80-90	75-85	60-75	40-55	15-25	NP-5
	3-7	Loam, gravelly loam.	SC, GC, CL	A-6	0-5	70-100	65-95	60-85	45-55	25-35	10-15
	7-11	Gravelly clay loam, gravelly sandy clay loam.	GC	A-6, A-7	0-5	55-65	50-60	45-55	35-45	35-45	15-20
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2095*: Robson-----	0-7	Cobbly loam-----	SM-SC, SC, CL-ML, CL	A-4, A-6	15-45	90-95	65-95	55-65	45-60	25-35	5-15
	7-19	Very cobbly clay, extremely cobbly clay.	GC	A-7	50-80	60-70	50-65	40-55	35-50	45-55	20-30
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
2096*: Punchbowl-----	0-3	Cobbly loam-----	SM, ML	A-4	25-40	80-90	75-85	60-75	40-55	15-25	NP-5
	3-7	Loam, gravelly loam.	SC, GC, CL	A-6	0-5	70-100	65-95	60-85	45-55	25-35	10-15
	7-11	Gravelly clay loam, gravelly sandy clay loam.	GC	A-6, A-7	0-5	55-65	50-60	45-55	35-45	35-45	15-20
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Locane-----	0-5	Cobbly loam-----	CL-ML, SM-SC	A-4	25-40	80-100	80-95	60-80	45-60	20-30	5-10
	5-19	Very gravelly clay loam.	GC	A-2	0-10	45-55	35-50	25-35	25-35	40-45	20-25
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Nobuck-----	0-7	Very cobbly loam	SM-SC	A-2, A-4	30-45	65-75	50-65	40-55	25-40	20-30	5-10
	7-42	Very gravelly clay loam, very gravelly sandy clay loam, very gravelly loam.	GC	A-2	10-25	50-65	35-50	30-45	20-35	35-45	15-20
	42-60	Very gravelly loam, very gravelly sandy loam.	GC, GM-GC	A-2	10-25	50-65	35-50	25-40	15-30	25-35	5-15
2097*: Punchbowl-----	0-3	Gravelly loam----	SM	A-2, A-4	5-10	65-85	60-75	45-60	30-45	15-25	NP-5
	3-7	Loam, gravelly loam.	SC, GC, CL	A-6	0-5	70-100	65-95	60-85	45-55	25-35	10-15
	7-11	Gravelly clay loam, gravelly sandy clay loam.	GC	A-6, A-7	0-5	55-65	50-60	45-55	35-45	35-45	15-20
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Itca-----	0-9	Cobbly loam-----	CL-ML, CL	A-4, A-6	15-30	80-90	70-90	65-80	50-65	25-35	5-15
	9-17	Very gravelly clay, very gravelly clay loam.	GC	A-7, A-2	10-20	50-65	40-50	35-45	25-40	40-50	15-25
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2099*: Punchbowl-----	0-3	Very gravelly loam.	GM	A-1, A-2	5-10	45-60	35-50	30-45	20-35	15-25	NP-5
	3-7	Loam, gravelly loam.	SC, CL, GC	A-6	0-5	70-100	65-95	60-85	45-55	25-35	10-15
	7-11	Gravelly clay loam, gravelly sandy clay loam.	GC	A-6, A-7	0-5	55-65	50-60	45-55	35-45	35-45	15-20
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Roca-----	0-5	Very cobbly loam	CL	A-6	50-60	85-100	75-85	70-80	50-60	25-35	10-15
	5-27	Very gravelly clay loam, very gravelly clay.	GC, SC	A-2	0-10	60-75	30-50	25-45	20-35	45-60	20-30
	27-31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
2100*: Grassval-----	0-4	Gravelly loam----	SM-SC	A-2, A-4	0-5	65-80	55-70	45-60	30-45	20-25	5-10
	4-13	Gravelly clay loam, gravelly loam.	GC	A-6	0-10	65-75	55-70	50-65	35-50	30-40	15-20
	13	Indurated-----	---	---	---	---	---	---	---	---	---
Grina-----	0-3	Very gravelly loam.	GM-GC, GC	A-2	0-5	45-60	30-45	25-40	15-30	25-35	5-15
	3-14	Loam, silt loam, silty clay loam.	CL	A-6, A-7	0	90-100	80-100	75-95	60-85	30-45	10-20
	14-18	Weathered bedrock	---	---	---	---	---	---	---	---	---
Unsel Variant---	0-2	Very gravelly loam.	GM-GC	A-2	10-15	45-60	35-50	30-45	20-35	20-30	5-10
	2-15	Gravelly clay loam.	SC	A-6, A-7	0	70-80	55-70	45-60	35-50	35-45	15-20
	15-22	Gravelly loam----	SM-SC, SC	A-4, A-6	0	70-85	55-70	45-60	35-50	25-35	5-15
	22	Weathered bedrock	---	---	---	---	---	---	---	---	---
2101*: Grassval-----	0-4	Fine sandy loam	SM-SC	A-2, A-4	0	85-95	80-90	65-80	30-45	20-25	5-10
	4-13	Gravelly clay loam, gravelly loam.	GC	A-6	0-10	65-75	55-70	50-65	35-50	30-40	15-20
	13	Indurated-----	---	---	---	---	---	---	---	---	---
Oxcorel, eroded	0-3	Very gravelly clay loam.	GC	A-2, A-6	5-10	45-55	40-50	35-45	30-40	30-40	15-20
	3-30	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	30-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5
Oxcorel-----	0-8	Gravelly fine sandy loam.	SM-SC, GM-GC	A-2, A-4	0-10	60-85	55-75	40-60	25-40	25-30	5-10
	8-34	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	34-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5

See footnote at end of table.



TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2102*: Grassval-----	0-4	Gravelly loam----	SM-SC	A-2, A-4	0-5	65-80	55-70	45-60	30-45	20-25	5-10
	4-13	Gravelly clay loam, gravelly loam.	GC	A-6	0-10	65-75	55-70	50-65	35-50	30-40	15-20
	13	Indurated-----	---	---	---	---	---	---	---	---	---
Wieland-----	0-8	Gravelly loam----	GC, CL, SC	A-6	0-5	60-85	50-75	45-70	35-60	25-35	10-15
	8-20	Gravelly clay, clay.	CH, SC	A-7	0-5	75-95	55-90	50-80	45-75	50-60	25-35
	20-25	Gravelly sandy clay loam, gravelly clay loam.	GC, SC	A-6, A-2	0-5	60-85	50-70	40-70	25-50	35-40	15-20
	25-60	Loam, gravelly loam, gravelly sandy loam.	CL-ML, SM-SC	A-4, A-2	0-5	65-95	55-90	40-85	25-70	20-30	5-10
2104*: Grassval-----	0-4	Gravelly loam----	SM-SC	A-2, A-4	0-5	65-80	55-70	45-60	30-45	20-25	5-10
	4-13	Gravelly clay loam, gravelly loam.	GC	A-6	0-10	65-75	55-70	50-65	35-50	30-40	15-20
	13	Indurated-----	---	---	---	---	---	---	---	---	---
Punchbowl-----	0-3	Gravelly fine sandy loam.	SM	A-2, A-4	5-10	65-85	60-75	55-70	25-40	15-25	NP-5
	3-7	Loam, gravelly loam.	SC, GC, CL	A-6	0-5	70-100	65-95	60-85	45-55	25-35	10-15
	7-11	Gravelly clay loam, gravelly sandy clay loam.	GC	A-6, A-7	0-5	55-65	50-60	45-55	35-45	35-45	15-20
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2105*: Grassval-----	0-4	Gravelly loam----	SM-SC	A-2, A-4	0-5	65-80	55-70	45-60	30-45	20-25	5-10
	4-13	Gravelly clay loam, gravelly loam.	GC	A-6	0-10	65-75	55-70	50-65	35-50	30-40	15-20
	13	Indurated-----	---	---	---	---	---	---	---	---	---
Glyphs-----	0-7	Fine sandy loam	CL-ML, SM-SC	A-4	0	95-100	85-95	75-85	45-60	25-30	5-10
	7-17	Gravelly sandy clay loam, gravelly clay loam.	CL, SC	A-6, A-7	0	80-90	60-75	55-65	40-55	35-45	15-20
	17-37	Gravelly sandy loam.	SM-SC, GM-GC	A-2	0	60-80	55-75	40-55	20-30	20-25	5-10
	37-60	Very gravelly coarse sand.	GP, GP-GM, SP, SP-SM	A-1	0-5	40-65	35-45	15-25	0-10	---	NP
Muni-----	0-3	Fine sandy loam	SM-SC	A-4	0	90-100	85-95	75-90	35-50	20-25	5-10
	3-18	Sandy clay loam, clay loam, loam.	CL	A-6	0	90-100	85-95	70-80	50-60	30-40	10-20
	18-49	Cemented-----	---	---	---	---	---	---	---	---	---
	49-60	Very gravelly loamy sand.	GM, SM	A-1	0-10	50-65	35-55	20-30	10-20	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct						
2110*: Isolde-----	0-6	Fine sand-----	SP, SP-SM	A-3	0	100	100	75-90	0-10	---	NP
	6-60	Fine sand, sand	SP, SP-SM	A-3	0	100	100	50-80	0-10	---	NP
Davey-----	0-5	Fine sandy loam	SM	A-2	0	100	100	80-95	25-35	---	NP
	5-14	Fine sandy loam, sandy loam.	SM	A-2, A-4	0	100	100	80-90	30-40	20-25	NP-5
	14-67	Fine sand, loamy fine sand.	SM	A-2	0	85-100	85-100	70-80	10-20	---	NP
2540*: Buffaran-----	0-4	Cobbly loam-----	SC, CL	A-6	15-30	75-90	75-85	50-75	40-60	25-35	10-15
	4-15	Gravelly clay loam, gravelly clay, clay.	CL, CH	A-7	0-5	75-90	70-85	65-80	50-65	40-55	20-30
	15-60	Indurated-----	---	---	---	---	---	---	---	---	---
Wieland-----	0-8	Gravelly loam----	GC, CL, SC	A-6	0-5	60-85	50-75	45-70	35-60	25-35	10-15
	8-20	Gravelly clay, clay.	CH, SC	A-7	0-5	75-95	55-90	50-80	45-75	50-60	25-35
	20-60	Loam, gravelly loam, gravelly sandy loam.	CL-ML, SM-SC	A-4, A-2	0-5	65-95	55-90	40-85	25-70	20-30	5-10
2541*: Buffaran-----	0-4	Gravelly loam----	SC, CL	A-6	5-15	75-90	70-80	50-75	40-60	25-35	10-15
	4-15	Gravelly clay loam, gravelly clay, clay.	CL, CH	A-7	0-5	75-90	70-85	65-80	50-65	40-55	20-30
	15-60	Indurated-----	---	---	---	---	---	---	---	---	---
Zoesta-----	0-7	Cobbly loam-----	CL-ML, ML	A-4	25-40	80-90	75-90	65-80	50-65	20-30	NP-10
	7-23	Clay-----	CL, CH	A-7	0-10	90-100	85-95	75-90	65-80	45-60	20-30
	23-31	Gravelly clay loam, gravelly clay.	GC, CL	A-6, A-7	0	60-75	55-70	50-65	40-55	35-50	15-25
	31-60	Very gravelly clay loam, very gravelly loam.	GC	A-2	0	45-55	30-45	25-40	20-35	30-40	10-15
2542*: Buffaran, gravelly-----	0-5	Gravelly loam----	GC, SC	A-6	0-5	65-80	55-70	45-60	35-50	25-35	10-15
	5-16	Gravelly clay, gravelly clay loam, clay.	CL, CH	A-7	0-5	75-90	70-85	65-80	50-65	40-55	20-30
	16-27	Indurated-----	---	---	---	---	---	---	---	---	---
	27-60	Cemented-----	---	---	---	---	---	---	---	---	---
Buffaran, very gravelly-----	0-5	Very gravelly fine sandy loam.	GM-GC	A-2	0-5	40-55	30-45	25-40	15-25	20-30	5-10
	5-16	Gravelly clay, gravelly clay loam, clay.	CL, CH	A-7	0-5	75-90	70-85	65-80	50-65	40-55	20-30
	16-27	Indurated-----	---	---	---	---	---	---	---	---	---
	27-60	Cemented-----	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2542*: Chiara-----	0-4	Very gravelly loam.	GM	A-1, A-2	0-5	50-60	35-50	30-45	20-35	15-25	NP-5
	4-13	Very fine sandy loam, silt loam, loam.	ML	A-4	0	95-100	95-100	95-100	75-85	15-25	NP-5
	13-60	Indurated-----	---	---	---	---	---	---	---	---	---
2543*: Buffaran-----	0-5	Gravelly loam----	GC, SC	A-6	0-5	65-80	55-70	45-60	35-50	25-35	10-15
	5-16	Gravelly clay, gravelly clay loam, clay.	CL, CH	A-7	0-5	75-90	70-85	65-80	50-65	40-55	20-30
	16-27	Indurated-----	---	---	---	---	---	---	---	---	---
	27-60	Cemented-----	---	---	---	---	---	---	---	---	---
Spasprey-----	0-5	Gravelly fine sandy loam.	SM, SM-SC	A-1, A-2	0-5	70-90	55-70	45-60	20-35	15-25	NP-10
	5-26	Loam, clay loam, sandy clay loam.	CL, SC	A-6	0-5	95-100	90-100	70-95	45-65	30-40	10-20
	26-33	Cemented-----	---	---	---	---	---	---	---	---	---
	33-60	Fine sandy loam, sandy loam, loamy sand.	SM	A-2	0	90-100	85-95	50-65	15-30	---	NP
Allor-----	0-12	Gravelly loam----	SM-SC	A-2, A-4	5-10	70-80	55-75	45-65	30-45	20-30	5-10
	12-34	Gravelly clay loam, gravelly sandy clay loam.	SC	A-6, A-7	0-10	70-85	55-75	45-65	35-50	35-45	15-20
	34-60	Gravelly loamy sand, very gravelly loamy sand.	SM	A-1	0-10	55-75	45-65	30-50	10-20	---	NP
2545*: Buffaran-----	0-5	Gravelly loam----	GC, SC	A-6	0-5	65-80	55-70	45-60	35-50	25-35	10-15
	5-16	Gravelly clay, gravelly clay loam, clay.	CL, CH	A-7	0-5	75-90	70-85	65-80	50-65	40-55	20-30
	16-27	Indurated-----	---	---	---	---	---	---	---	---	---
	27-60	Cemented-----	---	---	---	---	---	---	---	---	---
Pineval-----	0-5	Gravelly loam----	CL-ML, GM-GC	A-4	0	65-85	60-75	45-65	40-55	20-30	5-10
	5-11	Very gravelly clay loam, very gravelly loam, very gravelly sandy clay loam.	GC	A-2	0	35-60	25-50	20-40	15-35	30-40	10-15
	11-60	Stratified very gravelly sandy loam to extremely gravelly sand.	GP-GM, GM	A-1	0-25	30-60	20-50	15-40	5-20	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2546*: Buffaran-----	0-5	Very gravelly fine sandy loam.	GM-GC	A-2	0-5	40-55	30-45	25-40	15-25	20-30	5-10
	5-16	Gravelly clay, gravelly clay loam, clay.	CL, CH	A-7	0-5	75-90	70-85	65-80	50-65	40-55	20-30
	16-27	Indurated-----	---	---	---	---	---	---	---	---	---
	27-60	Cemented-----	---	---	---	---	---	---	---	---	---
Spasprey-----	0-5	Gravelly fine sandy loam.	SM, SM-SC	A-1, A-2	0-5	70-90	55-70	45-60	20-35	15-25	NP-10
	5-26	Loam, clay loam, sandy clay loam.	CL, SC	A-6	0-5	95-100	90-100	70-95	45-65	30-40	10-20
	26-33	Cemented-----	---	---	---	---	---	---	---	---	---
	33-60	Fine sandy loam, sandy loam, loamy sand.	SM	A-2	0	90-100	85-95	50-65	15-30	---	NP
Locane-----	0-6	Gravelly loam----	SM-SC	A-4, A-2	0-5	70-85	55-70	45-60	30-50	20-30	5-10
	6-14	Very gravelly clay loam.	GC	A-2, A-7, A-6	0-10	50-65	35-50	30-45	25-40	35-45	15-20
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2547*: Buffaran-----	0-2	Gravelly loam----	SC, CL	A-6	5-15	75-90	70-80	50-75	40-60	25-35	10-15
	2-16	Gravelly clay loam, gravelly clay, clay.	CL, CH	A-7	0-5	75-90	70-85	65-80	50-65	40-55	20-30
	16-27	Indurated-----	---	---	---	---	---	---	---	---	---
	27-60	Cemented-----	---	---	---	---	---	---	---	---	---
Desatoya-----	0-6	Very gravelly loam.	GM-GC	A-2	0-10	50-60	40-50	35-45	25-35	20-30	5-10
	6-13	Gravelly clay loam, gravelly clay.	GC	A-7	0-5	65-75	55-70	50-60	40-50	40-50	20-30
	13-60	Stratified extremely gravelly sandy loam to very gravelly loamy sand.	GM	A-1	25-35	35-50	25-45	15-30	10-15	15-25	NP-5
2548*: Buffaran-----	0-5	Very gravelly fine sandy loam.	GM-GC	A-2	0-5	40-55	30-45	25-40	15-25	20-30	5-10
	5-16	Gravelly clay, gravelly clay loam, clay.	CL, CH	A-7	0-5	75-90	70-85	65-80	50-65	40-55	20-30
	16-27	Indurated-----	---	---	---	---	---	---	---	---	---
	27-60	Cemented-----	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct						
2548*: Tenabo-----	0-4	Gravelly very fine sandy loam.	SM, GM	A-2, A-4	0-5	60-70	50-60	45-55	25-40	---	NP
	4-15	Silty clay loam, clay loam, gravelly clay loam.	CL	A-6	0	95-100	70-90	60-90	50-80	30-40	10-20
	15-28	Indurated-----	---	---	---	---	---	---	---	---	---
	28-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP-GM, GM	A-1	5-25	40-60	35-55	25-35	5-20	---	NP
Pineval-----	0-5	Gravelly fine sandy loam.	SM-SC	A-2	0	65-85	60-75	50-70	20-35	20-30	5-10
	5-11	Very gravelly clay loam, very gravelly loam, very gravelly sandy clay loam.	GC	A-2	0	35-60	25-50	20-40	15-35	30-40	10-15
	11-60	Stratified very gravelly sandy loam to extremely gravelly sand.	GP-GM, GM	A-1	0-25	30-60	20-50	15-40	5-20	---	NP
2554*: Laped-----	0-6	Very gravelly fine sandy loam.	GM-GC	A-2	0-5	45-60	35-50	25-40	15-30	20-30	5-10
	6-18	Gravelly clay loam.	GC, SC	A-6, A-7	0-10	60-80	55-75	45-60	35-50	35-45	15-20
	18-23	Indurated-----	---	---	---	---	---	---	---	---	---
	23	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Hooplite-----	0-4	Very gravelly fine sandy loam.	GM-GC	A-2	0-10	45-60	35-50	30-45	10-20	20-30	5-10
	4-8	Very gravelly loam, very gravelly clay loam.	GC	A-2, A-6	0-15	45-60	35-50	30-45	25-40	30-40	10-15
	8	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Osoll-----	0-5	Very gravelly fine sandy loam.	GM-GC	A-2	10-15	40-60	35-55	35-55	15-35	20-25	5-10
	5-12	Very gravelly loam, very gravelly fine sandy loam.	GM-GC	A-2	10-25	30-55	25-50	20-50	10-35	20-25	5-10
	12-35	Indurated-----	---	---	---	---	---	---	---	---	---
	35	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2555*: Laped-----	0-6	Very cobbly loam	SM-SC, GM-GC	A-4	30-50	65-80	50-70	45-60	35-50	20-30	5-10
	6-18	Gravelly clay loam.	GC, SC	A-6, A-7	0-5	60-80	55-70	45-60	35-50	35-45	15-20
	18-23	Indurated-----	---	---	---	---	---	---	---	---	---
	23	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Colbar-----	0-3	Very cobbly loam	CL-ML	A-4	50-60	90-100	85-95	75-85	50-60	20-30	5-10
	3-22	Cobbly loam, gravelly clay loam, cobbly clay loam.	CL	A-6	10-35	90-95	70-85	60-80	50-65	30-40	10-20
	22-26	Gravelly loam, cobbly loam.	SM-SC, CL-ML	A-4	5-30	75-95	60-90	55-75	35-55	20-30	5-10
	26-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2570*: Colbar-----	0-6	Gravelly loam----	SM-SC, SM, GM, GM-GC	A-4	0-5	65-85	60-75	50-65	35-50	20-30	NP-10
	6-16	Cobbly loam, gravelly clay loam, cobbly clay loam.	CL	A-6	10-35	75-90	70-85	60-80	50-65	30-40	10-20
	16-21	Gravelly loam, cobbly loam.	SM-SC, CL-ML	A-4	5-30	75-95	60-90	55-75	35-55	20-30	5-10
	21	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Atlow-----	0-3	Very cobbly loam	SM-SC	A-4	35-50	70-80	60-75	50-65	35-50	20-30	5-10
	3-14	Very gravelly clay loam.	GC	A-2, A-6	5-15	45-60	35-50	30-45	25-40	30-40	10-15
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Burrita-----	0-7	Very cobbly loam	GM-GC	A-4	25-40	60-70	55-65	50-60	35-45	15-25	5-10
	7-14	Very cobbly clay, very stony clay loam, very gravelly clay loam.	GC, SC	A-2, A-7	10-55	35-75	30-55	25-50	20-45	40-55	20-30
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2603*: Grina-----	0-5	Gravelly loam----	SM-SC, SC	A-4, A-6	0-5	70-85	55-70	45-60	35-50	25-35	5-15
	5-14	Loam, silt loam, silty clay loam.	CL	A-6, A-7	0	90-100	80-100	75-95	60-85	30-45	10-20
	14	Weathered bedrock	---	---	---	---	---	---	---	---	---
Genaw-----	0-6	Gravelly loam----	GM-GC, SM-SC	A-4	0-5	65-80	55-75	45-65	35-50	20-30	5-10
	6-11	Gravelly loam, gravelly clay loam.	GC, SC	A-6	0-5	60-80	55-75	45-65	35-50	25-35	10-15
	11-16	Very gravelly loam.	GM-GC	A-2	0-5	45-55	35-50	25-45	20-35	25-30	5-10
	16	Weathered bedrock	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct						
2640*: Rasille-----	0-6	Silt loam-----	ML	A-4	0	100	100	95-100	85-100	20-30	NP-5
	6-15	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	75-100	20-30	NP-5
	15-41	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	75-100	20-30	NP-5
	41-60	Stratified fine sandy loam to very gravelly coarse sand.	SM, GM	A-1	0	55-80	50-75	15-35	10-20	---	NP
Kelk-----	0-14	Silt loam-----	CL-ML, CL	A-4, A-6	0	95-100	95-100	95-100	75-90	25-35	5-15
	14-51	Silt loam-----	CL-ML, CL	A-4, A-6	0	95-100	95-100	95-100	85-95	25-35	5-15
	51-60	Silt loam-----	CL-ML, CL	A-4, A-6	0	95-100	90-100	90-100	80-95	25-35	5-15
2672*: Zoesta Variant--	0-8	Gravelly loam----	GM, SM	A-4	0-5	65-80	55-70	50-65	35-50	20-30	NP-5
	8-27	Clay-----	CH	A-7	0	85-95	85-95	80-95	70-85	60-70	30-40
	27-36	Clay loam, clay	CL, CH	A-7	0	85-95	85-95	80-90	65-80	45-55	20-30
	36-60	Gravelly loam, gravelly sandy loam.	SM-SC	A-2, A-4	0-5	65-80	55-70	40-55	25-40	25-30	5-10
Jung-----	0-8	Very cobbly fine sandy loam.	SM-SC	A-2	35-50	65-80	50-65	40-60	20-35	25-30	5-10
	8-19	Very cobbly clay loam, very cobbly clay, very gravelly clay loam.	GC	A-7	15-40	55-65	50-60	40-50	35-45	40-55	20-30
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Trunk-----	0-3	Cobbly loam-----	CL-ML, ML	A-4	15-30	75-95	70-90	60-90	50-70	20-30	NP-10
	3-30	Gravelly clay, gravelly clay loam.	CL, CH, GC	A-7	0-10	55-85	50-80	45-75	40-65	40-55	20-30
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2681*: Tessfive-----	0-6	Gravelly loam----	SM-SC, GM-GC	A-4	0-5	65-80	55-70	45-60	35-50	20-30	5-10
	6-16	Gravelly loam, gravelly sandy loam.	SM-SC, GM-GC	A-4, A-1, A-2	0-5	55-80	50-70	35-60	20-50	20-30	5-10
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Puett-----	0-4	Gravelly sandy loam.	SM-SC	A-2	0-5	70-80	60-70	45-55	20-35	20-30	5-10
	4-15	Coarse sandy loam, gravelly loam, sandy loam.	SM, ML, GM	A-1, A-2, A-4	0	55-95	50-90	30-80	15-55	---	NP
	15-19	Weathered bedrock	---	---	---	---	---	---	---	---	---
Grina-----	0-3	Gravelly loam----	SM-SC, SC	A-4, A-6	0-5	70-85	55-70	45-60	35-50	25-35	5-15
	3-14	Loam, silt loam, silty clay loam.	CL	A-6, A-7	0	90-100	80-100	75-95	60-85	30-45	10-20
	14-18	Weathered bedrock	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2683*: Tessfive-----	0-6	Gravelly loam----	SM-SC, GM-GC	A-4	0-5	65-80	55-70	45-60	35-50	20-30	5-10
	6-16	Gravelly loam, gravelly sandy loam.	SM-SC, GM-GC	A-4, A-1, A-2	0-5	55-80	50-70	35-60	20-50	20-30	5-10
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Genaw-----	0-6	Gravelly loam----	GM-GC, SM-SC	A-4	0-5	65-80	55-75	45-65	35-50	20-30	5-10
	6-11	Gravelly loam, gravelly clay loam.	GC, SC	A-6	0-5	60-80	55-75	45-65	35-50	25-35	10-15
	11-16	Very gravelly loam.	GM-GC	A-2	0-5	45-55	35-50	25-45	20-35	25-30	5-10
	16	Weathered bedrock	---	---	---	---	---	---	---	---	---
Orovada-----	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-65	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
2684*: Tessfive-----	0-6	Gravelly loam----	SM-SC, GM-GC	A-4	0-5	65-80	55-70	45-60	35-50	20-30	5-10
	6-16	Gravelly loam, gravelly sandy loam.	SM-SC, GM-GC	A-4, A-1, A-2	0-5	55-80	50-70	35-60	20-50	20-30	5-10
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Perlor-----	0-7	Fine sandy loam	SM	A-2, A-4	0-5	85-100	80-100	70-90	25-40	15-25	NP-5
	7-14	Loam, sandy loam, gravelly sandy loam.	SM, ML	A-4	0-5	75-100	70-95	50-80	35-65	15-25	NP-5
	14	Weathered bedrock	---	---	---	---	---	---	---	---	---
Orovada-----	0-8	Gravelly very fine sandy loam.	GM, SM	A-2, A-4	0	60-80	55-75	45-70	30-50	15-25	NP-5
	8-20	Fine sandy loam, loam, very fine sandy loam.	SM, ML	A-4	0	75-100	75-95	60-85	40-70	20-30	NP-5
	20-65	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
2690*: Itca Variant----	0-3	Very gravelly loam.	GC	A-2	0-10	45-60	30-45	25-35	15-25	25-35	10-15
	3-12	Gravelly clay loam.	SC	A-6	0	70-80	55-70	45-60	35-50	30-40	15-20
	12	Weathered bedrock	---	---	---	---	---	---	---	---	---

See footnote at end of table.



TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches Pct	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In										
2690*: Reluctan-----	0-9	Very gravelly loam.	GM-GC	A-2, A-4	10-25	35-65	30-55	25-55	20-40	25-30	5-10
	9-27	Gravelly clay loam, gravelly loam.	GC, CL	A-6, A-7	0-15	65-85	60-75	55-75	40-60	35-45	15-20
	27	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Handy-----	0-4	Gravelly loam----	SC	A-2, A-6	0-10	65-75	55-65	40-50	30-40	30-35	10-15
	4-30	Gravelly clay, clay.	CH, CL	A-7	0-10	70-100	60-100	60-75	50-70	45-55	30-35
	30-60	Stratified gravelly loam to very gravelly loamy sand.	GM	A-1, A-2	0-10	35-65	30-60	20-55	10-35	15-25	NP-5
2730*: Pula-----	0-2	Very gravelly sandy loam.	GM, GM-GC, SM, SM-SC	A-1, A-2	0-10	50-65	35-50	25-40	10-25	20-30	NP-10
	2-24	Very gravelly clay loam, extremely gravelly clay loam, extremely gravelly clay.	GC	A-2, A-7	10-30	30-60	20-55	20-50	15-45	50-60	30-40
	24-60	Extremely gravelly sandy loam, extremely gravelly sandy clay loam.	GM-GC, GC, GP-GM, GP-GC	A-1, A-2	20-30	35-45	15-25	10-20	5-15	20-35	NP-15
Spike-----	0-2	Very gravelly sandy loam.	GM-GC	A-2	0-5	50-65	35-50	25-40	15-30	20-30	5-10
	2-6	Very gravelly clay, very gravelly clay loam, very gravelly sandy clay.	GC	A-2	5-15	50-65	35-50	30-45	20-35	45-55	25-30
	6-60	Extremely gravelly sandy clay loam, extremely gravelly clay loam, very gravelly loam.	GP-GC, GC	A-2	10-25	30-50	10-35	5-30	5-20	25-35	10-15
Buffaran-----	0-5	Gravelly loam----	GC, SC	A-6	0-5	65-80	55-70	45-60	35-50	25-35	10-15
	5-16	Gravelly clay, gravelly clay loam, clay.	CL, CH	A-7	0-5	75-90	70-85	65-80	50-65	40-55	20-30
	16-27	Indurated-----	---	---	---	---	---	---	---	---	---
	27-60	Cemented-----	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2731*: Pula-----	0-2	Very cobbly loam	GC	A-2, A-6	25-50	50-75	45-70	40-60	30-50	30-35	10-15
	2-24	Very gravelly clay loam, extremely gravelly clay loam, extremely gravelly clay.	GC	A-2, A-7	10-30	30-60	20-55	20-50	15-45	50-60	30-40
	24-60	Extremely gravelly sandy loam, extremely gravelly sandy clay loam.	GM-GC, GC, GP-GM, GP-GC	A-1, A-2	20-30	35-45	15-25	10-20	5-15	20-35	NP-15
Spike-----	0-2	Very gravelly sandy loam.	GM-GC	A-2	0-5	50-65	35-50	25-40	15-30	20-30	5-10
	2-6	Very gravelly clay, very gravelly clay loam, very gravelly sandy clay.	GC	A-2	5-15	50-65	35-50	30-45	20-35	45-55	25-30
	6-60	Extremely gravelly sandy clay loam, extremely gravelly clay loam, very gravelly loam.	GP-GC, GC	A-2	10-25	30-50	10-35	5-30	5-20	25-35	10-15
2740*: Spike-----	0-2	Very gravelly sandy loam.	GM-GC	A-2	0-5	50-65	35-50	25-40	15-30	20-30	5-10
	2-6	Very gravelly clay, very gravelly clay loam, very gravelly sandy clay.	GC	A-2	5-15	50-65	35-50	30-45	20-35	45-55	25-30
	6-60	Extremely gravelly sandy clay loam, extremely gravelly clay loam, very gravelly loam.	GP-GC, GC	A-2	10-25	30-50	10-35	5-30	5-20	25-35	10-15
Desatoya Variant	0-3	Very gravelly sandy loam.	GM-GC	A-2	0	45-60	35-50	25-40	10-25	20-30	5-10
	3-13	Gravelly clay loam, gravelly sandy clay loam.	SC, CL	A-6, A-7	0	70-85	55-70	45-60	40-55	35-45	15-20
	13-26	Very gravelly sandy loam.	GM	A-1	0	45-60	35-50	25-40	10-25	15-20	NP-5
	26-60	Very gravelly sand.	GP-GM, SP-SM	A-1	0	45-60	35-50	20-35	5-10	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2740*: Grassval-----	0-4	Gravelly loam----	SM-SC	A-2, A-4	0-5	65-80	55-70	45-60	30-45	20-25	5-10
	4-13	Gravelly clay loam, gravelly loam.	GC	A-6	0-10	65-75	55-70	50-65	35-50	30-40	15-20
	13	Indurated-----	---	---	---	---	---	---	---	---	---
2771*: Kram-----	0-3	Very gravelly very fine sandy loam.	GM	A-1, A-2	10-15	50-60	35-50	30-50	20-30	15-25	NP-5
	3-10	Very gravelly loam, very gravelly very fine sandy loam, extremely gravelly loam.	GM	A-1, A-2	0-15	25-60	15-55	15-45	10-30	15-25	NP-5
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Hopeka-----	0-8	Very gravelly loam.	GC	A-2	0-15	40-55	25-50	25-45	20-35	25-35	10-15
	8-12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
2780*: Desatoya-----	0-6	Gravelly fine sandy loam.	SM-SC	A-2, A-4	0-10	65-80	50-75	45-60	25-40	20-30	5-10
	6-13	Gravelly clay loam, gravelly clay.	GC	A-7	0-5	65-75	55-70	50-60	40-50	40-50	20-30
	13-60	Stratified extremely gravelly sandy loam to very gravelly loamy sand.	GM	A-1	25-35	35-50	25-45	15-30	10-15	15-25	NP-5
Tenabo-----	0-5	Very gravelly fine sandy loam.	GM	A-1, A-2	5-10	40-55	35-50	25-45	20-30	15-25	NP-5
	5-17	Silty clay loam, clay loam, gravelly clay loam.	CL	A-6	0	95-100	70-90	60-90	50-80	30-40	10-20
	17-31	Indurated-----	---	---	---	---	---	---	---	---	---
	31-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP-GM, GM	A-1	5-25	40-60	35-55	25-35	5-20	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2780*: Pineval-----	0-5	Gravelly loam----	CL-ML, GM-GC	A-4	0	65-85	60-75	45-65	40-55	20-30	5-10
	5-11	Very gravelly clay loam, very gravelly loam, very gravelly sandy clay loam.	GC	A-2	0	35-60	25-50	20-40	15-35	30-40	10-15
	11-60	Stratified very gravelly sandy loam to extremely gravelly sand.	GP-GM, GM	A-1	0-25	30-60	20-50	15-40	5-20	---	NP
2781*: Desatoya-----	0-6	Gravelly fine sandy loam.	SM-SC	A-2, A-4	0-10	65-80	50-75	45-60	25-40	20-30	5-10
	6-13	Gravelly clay loam, gravelly clay.	GC	A-7	0-5	65-75	55-70	50-60	40-50	40-50	20-30
	13-60	Stratified extremely gravelly sandy loam to very gravelly loamy sand.	GM	A-1	25-35	35-50	25-45	15-30	10-15	15-25	NP-5
Orovada-----	0-8	Gravelly fine sandy loam.	GM, SM	A-2, A-4	0	60-80	55-75	50-70	25-40	---	NP
	8-20	Fine sandy loam, loam, very fine sandy loam.	SM, ML	A-4	0	75-100	75-95	60-85	40-70	20-30	NP-5
	20-65	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
2782*: Desatoya-----	0-3	Very gravelly loam.	GM-GC	A-2	0-10	50-60	40-50	35-45	25-35	20-30	5-10
	3-14	Gravelly clay loam, gravelly clay.	GC	A-7	0-5	65-75	55-70	50-60	40-50	40-50	20-30
	14-60	Stratified extremely gravelly sandy loam to very gravelly loamy sand.	GM	A-1	25-35	35-50	25-45	15-30	10-15	15-25	NP-5
Pineval-----	0-5	Gravelly loam----	CL-ML, GM-GC	A-4	0	65-85	60-75	45-65	40-55	20-30	5-10
	5-11	Very gravelly clay loam, very gravelly loam, very gravelly sandy clay loam.	GC	A-2	0	35-60	25-50	20-40	15-35	30-40	10-15
	11-60	Stratified very gravelly sandy loam to extremely gravelly sand.	GP-GM, GM	A-1	0-25	30-60	20-50	15-40	5-20	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2782*: Grassval-----	0-4	Gravelly loam----	SM-SC	A-2, A-4	0-5	65-80	55-70	45-60	30-45	20-25	5-10
	4-13	Gravelly clay loam, gravelly loam.	GC	A-6	0-10	65-75	55-70	50-65	35-50	30-40	15-20
	13	Indurated-----	---	---	---	---	---	---	---	---	---
2783*: Desatoya, steep	0-3	Very gravelly sandy loam.	GM-GC, SM-SC	A-2	0-10	50-70	35-50	25-40	15-30	20-30	5-10
	3-14	Gravelly clay loam, gravelly clay.	GC	A-7	0-5	65-75	55-70	50-60	40-50	40-50	20-30
	14-60	Stratified extremely gravelly sandy loam to very gravelly loamy sand.	GM	A-1	25-35	35-50	25-45	15-30	10-15	15-25	NP-5
Spike-----	0-2	Very gravelly sandy loam.	GM-GC	A-2	0-5	50-65	35-50	25-40	15-30	20-30	5-10
	2-6	Very gravelly clay, very gravelly clay loam, very gravelly sandy clay.	GC	A-2	5-15	50-65	35-50	30-45	20-35	45-55	25-30
	6-60	Extremely gravelly sandy clay loam, extremely gravelly clay loam, very gravelly loam.	GP-GC, GC	A-2	10-25	30-50	10-35	5-30	5-20	25-35	10-15
Desatoya, strongly sloping	0-3	Gravelly sandy loam.	SM-SC	A-2, A-4	0-10	65-80	50-75	45-60	25-40	20-30	5-10
	3-14	Gravelly clay loam, gravelly clay.	GC	A-7	0-5	65-75	55-70	50-60	40-50	40-50	20-30
	14-60	Stratified extremely gravelly sandy loam to very gravelly loamy sand.	GM	A-1	25-35	35-50	25-45	15-30	10-15	15-25	NP-5
2791*: Old Camp-----	0-2	Very cobbly loam	GM, GM-GC, SM, SM-SC	A-2, A-4	25-55	60-70	55-65	45-55	30-40	15-25	NP-10
	2-11	Very cobbly clay loam, extremely stony sandy clay loam, very stony clay loam.	GC	A-2, A-6	35-50	40-55	35-50	30-45	25-40	30-40	15-25
	11-15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2791*: Colbar-----	0-3	Very cobbly loam	CL-ML	A-4	50-60	90-100	85-95	75-85	50-60	20-30	5-10
	3-22	Cobbly loam, gravelly clay loam, cobbly clay loam.	CL	A-6	10-35	90-95	70-85	60-80	50-65	30-40	10-20
	22-26	Gravelly loam, cobbly loam.	SM-SC, CL-ML	A-4	5-30	75-95	60-90	55-75	35-55	20-30	5-10
	26-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
2792*: Old Camp-----	0-2	Gravelly loam----	SM-SC	A-4	0-5	70-85	60-75	50-65	35-50	25-30	5-10
	2-11	Very cobbly clay loam, extremely stony sandy clay loam, very stony clay loam.	GC	A-2, A-6	35-50	40-55	35-50	30-45	25-40	30-40	15-25
	11-15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Allor-----	0-12	Gravelly loam----	SM-SC	A-2, A-4	5-10	70-80	55-75	45-65	30-45	20-30	5-10
	12-34	Gravelly clay loam, gravelly sandy clay loam.	SC	A-6, A-7	0-10	70-85	55-75	45-65	35-50	35-45	15-20
	34-60	Gravelly loamy sand, very gravelly loamy sand.	SM	A-1	0-10	55-75	45-65	30-50	10-20	---	NP
Puett-----	0-3	Very gravelly loam.	GM	A-1, A-2	0-10	50-60	40-50	35-45	20-35	15-20	NP-5
	3-13	Coarse sandy loam, gravelly loam, sandy loam.	SM, ML, GM	A-1, A-2, A-4	0	55-95	50-90	30-80	15-55	---	NP
	13	Weathered bedrock	---	---	---	---	---	---	---	---	---
2793*: Old Camp-----	0-2	Very cobbly loam	GM, GM-GC, SM, SM-SC	A-2, A-4	25-55	60-70	55-65	45-55	30-40	15-25	NP-10
	2-11	Very cobbly clay loam, extremely stony sandy clay loam, very stony clay loam.	GC	A-2, A-6	35-50	40-55	35-50	30-45	25-40	30-40	15-25
	11-15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Laped-----	0-6	Very cobbly loam	SM-SC, GM-GC	A-4	30-50	65-80	50-70	45-60	35-50	20-30	5-10
	6-18	Gravelly clay loam.	GC, SC	A-6, A-7	0-5	60-80	55-70	45-60	35-50	35-45	15-20
	18-23	Indurated-----	---	---	---	---	---	---	---	---	---
	23	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct						
2797*: Old Camp, steep	0-2	Gravelly loam----	SM-SC	A-4	0-5	70-85	60-75	50-65	35-50	25-30	5-10
	2-11	Very cobbly clay loam, extremely stony sandy clay loam, very stony clay loam.	GC	A-2, A-6	35-50	40-55	35-50	30-45	25-40	30-40	15-25
	11-15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Colbar-----	0-3	Cobbly loam-----	CL-ML	A-4	35-45	90-100	85-95	75-85	50-60	20-30	5-10
	3-22	Cobbly loam, gravelly clay loam, cobbly clay loam.	CL	A-6	10-35	90-95	70-85	60-80	50-65	30-40	10-20
	22-26	Gravelly loam, cobbly loam.	SM-SC, CL-ML	A-4	5-30	75-95	60-90	55-75	35-55	20-30	5-10
	26-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Old Camp, strongly sloping-----	0-2	Very cobbly loam	GM, GM-GC, SM, SM-SC	A-2, A-4	25-55	60-70	55-65	45-55	30-40	15-25	NP-10
	2-11	Very cobbly clay loam, extremely stony sandy clay loam, very stony clay loam.	GC	A-2, A-6	35-50	40-55	35-50	30-45	25-40	30-40	15-25
	11-15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2798*: Old Camp-----	0-2	Gravelly loam----	SM-SC	A-4	0-5	70-85	60-75	50-65	35-50	25-30	5-10
	2-11	Very cobbly clay loam, extremely stony sandy clay loam, very stony clay loam.	GC	A-2, A-6	35-50	40-55	35-50	30-45	25-40	30-40	15-25
	11-15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Atlow-----	0-3	Very gravelly loam.	GC, SC	A-2, A-6	0-15	35-85	30-50	20-45	15-40	25-35	10-15
	3-14	Very gravelly clay loam, very cobbly clay loam.	GC	A-2, A-6, A-7	0-45	35-60	25-50	20-50	15-40	35-45	15-20
	14-18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Osoll-----	0-5	Very gravelly loam.	GM-GC	A-4, A-2	0	30-60	25-50	20-50	15-40	20-25	5-10
	5-12	Very gravelly loam, very gravelly fine sandy loam.	GM-GC	A-2	10-25	30-55	25-50	20-50	10-35	20-25	5-10
	12-35	Indurated-----	---	---	---	---	---	---	---	---	---
	35	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3001*: Barrier-----	0-7	Cobbly loam-----	SM, ML	A-4	15-30	85-95	80-90	60-75	45-60	20-25	NP-5
	7-12	Gravelly loam, gravelly sandy loam, fine sandy loam.	SM, GM	A-2, A-4	0	60-90	50-80	40-70	25-50	20-25	NP-5
	12-27	Cemented-----	---	---	---	---	---	---	---	---	---
	27-60	Very cobbly loamy sand.	SM	A-1	50-60	70-90	65-85	40-50	10-25	---	NP
Kobeh-----	0-7	Gravelly fine sandy loam.	SM	A-1, A-2	0	70-80	55-70	45-60	20-35	---	NP
	7-20	Gravelly sandy loam, gravelly fine sandy loam.	SM	A-1, A-2	0	70-80	55-70	45-55	20-30	15-25	NP-5
	20-60	Stratified gravelly fine sandy loam to very gravelly sand.	GP-GM, GM, SP-SM, SM	A-1	0	40-65	35-50	25-45	5-20	---	NP
3011*: Defler-----	0-4	Gravelly fine sandy loam.	GM, SM	A-2, A-4, A-1	0-5	55-80	50-75	40-60	20-40	15-25	NP-5
	4-38	Very gravelly fine sandy loam, very gravelly loam, very gravelly sandy loam.	GM	A-1, A-2	0-10	30-55	25-50	15-40	10-30	15-25	NP-5
	38-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP-GM, GM	A-1	0-10	25-40	20-35	10-20	5-15	---	NP
Orovada-----	0-5	Gravelly fine sandy loam.	SM-SC, SM	A-2, A-4	0-5	70-90	55-70	45-60	25-40	20-30	NP-10
	5-15	Fine sandy loam, loam, silt loam.	CL-ML, ML	A-4	0	90-100	85-100	75-90	50-70	20-30	NP-10
	15-40	Fine sandy loam	SM-SC, SM	A-2, A-4	0	90-100	80-95	70-85	30-45	20-30	NP-10
	40-60	Stratified gravelly sandy loam to very gravelly sand.	SP-SM, SM	A-1	0-5	75-90	45-60	30-45	5-15	---	NP
3050----- Novacan	0-5	Cobbly loam-----	CL-ML	A-4	25-40	80-95	75-90	65-80	50-65	25-30	5-10
	5-24	Clay, gravelly clay.	CH	A-7	0-5	65-90	60-85	55-80	50-75	50-60	25-35
	24-45	Cemented-----	---	---	---	---	---	---	---	---	---
	45-60	Very cobbly loamy sand.	SM	A-1	50-60	65-90	55-80	35-50	10-20	---	NP

See footnote at end of table.



TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct						
3071*:											
Allor-----	0-12	Gravelly loam----	SM-SC	A-2, A-4	5-10	70-80	55-75	45-65	30-45	20-30	5-10
	12-34	Gravelly clay loam, gravelly sandy clay loam.	SC	A-6, A-7	0-10	70-85	55-75	45-65	35-50	35-45	15-20
	34-60	Gravelly loamy sand, very gravelly loamy sand.	SM	A-1	0-10	55-75	45-65	30-50	10-20	---	NP
Wieland-----	0-8	Gravelly loam----	GC, CL, SC	A-6	0-5	60-85	50-75	45-70	35-60	25-35	10-15
	8-20	Gravelly clay, clay.	CH, SC	A-7	0-5	75-95	55-90	50-80	45-75	50-60	25-35
	20-60	Loam, gravelly loam, gravelly sandy loam.	CL-ML, SM-SC	A-4, A-2	0-5	65-95	55-90	40-85	25-70	20-30	5-10
3072*:											
Allor-----	0-12	Gravelly loam----	SM-SC	A-2, A-4	5-10	70-80	55-75	45-65	30-45	20-30	5-10
	12-34	Gravelly clay loam, gravelly sandy clay loam.	SC	A-6, A-7	0-10	70-85	55-75	45-65	35-50	35-45	15-20
	34-60	Gravelly loamy sand, very gravelly loamy sand.	SM	A-1	0-10	55-75	45-65	30-50	10-20	---	NP
Orovada-----	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-65	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
3073*:											
Allor-----	0-12	Gravelly loam----	SM-SC	A-2, A-4	5-10	70-80	55-75	45-65	30-45	20-30	5-10
	12-34	Gravelly clay loam, gravelly sandy clay loam.	SC	A-6, A-7	0-10	70-85	55-75	45-65	35-50	35-45	15-20
	34-60	Gravelly loamy sand, very gravelly loamy sand.	SM	A-1	0-10	55-75	45-65	30-50	10-20	---	NP
Kelk-----	0-4	Very fine sandy loam.	ML	A-4	0	100	95-100	90-100	75-90	15-25	NP-5
	4-12	Silt loam-----	ML, CL-ML	A-4	0	100	95-100	90-100	85-95	25-35	5-10
	12-40	Silt loam-----	CL-ML	A-4	0	100	95-100	90-100	85-95	20-30	5-10
	40-60	Silty clay loam	ML	A-6, A-7	0	100	100	95-100	90-100	35-45	10-15
3074*:											
Allor-----	0-12	Fine sandy loam	SM-SC, SM	A-2, A-4	0-5	85-100	85-95	65-80	25-40	25-35	5-10
	12-34	Gravelly clay loam, gravelly sandy clay loam.	GC, CL, SC	A-6, A-7	0-10	60-80	55-75	45-65	35-55	35-45	15-20
	34-60	Gravelly loamy sand, very gravelly loamy sand.	SM	A-1	0-10	55-75	45-65	30-50	10-20	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3074*: Orovada-----	0-8	Very fine sandy loam.	ML	A-4	0	95-100	90-100	80-95	60-75	25-35	NP-5
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-65	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
3080*: Zaidy-----	0-5	Very gravelly sandy loam.	GM-GC, GM	A-2, A-1	10-15	50-65	40-55	25-40	15-30	20-30	NP-10
	5-25	Loam, clay loam, gravelly clay loam.	SC, CL	A-6	0	75-90	60-85	55-70	45-60	30-40	10-15
	25-60	Cemented-----	---	---	---	---	---	---	---	---	---
Ricert-----	0-6	Gravelly fine sandy loam.	SM, SM-SC	A-2, A-4	0	65-80	50-75	40-60	25-40	20-30	NP-10
	6-18	Loam, clay loam	CL	A-6, A-7	0	90-100	85-100	80-90	70-80	35-45	15-20
	18-60	Very gravelly sandy loam, very gravelly loamy sand, extremely gravelly loamy sand.	GM, GP-GM	A-1	0-15	30-60	20-50	15-35	5-25	---	NP
3081*: Zaidy-----	0-5	Very gravelly fine sandy loam.	GM-GC, GM	A-2, A-1	10-15	50-65	40-55	35-50	20-30	20-30	NP-10
	5-25	Loam, clay loam, gravelly clay loam.	SC, CL	A-6	0	75-90	60-85	55-70	45-60	30-40	10-15
	25-60	Cemented-----	---	---	---	---	---	---	---	---	---
Allor-----	0-12	Gravelly loam----	SM-SC	A-2, A-4	5-10	70-80	55-75	45-65	30-45	20-30	5-10
	12-34	Gravelly clay loam, gravelly sandy clay loam.	SC	A-6, A-7	0-10	70-85	55-75	45-65	35-50	35-45	15-20
	34-60	Gravelly loamy sand, very gravelly loamy sand.	SM	A-1	0-10	55-75	45-65	30-50	10-20	---	NP
3091*: Packer-----	0-10	Extremely gravelly loam.	GM-GC, GP-GC	A-2	15-25	30-40	15-30	10-25	5-20	20-30	5-10
	10-21	Extremely cobbly clay loam, extremely cobbly loam.	GC	A-2	40-55	40-55	30-45	25-40	15-30	30-40	10-15
	21-60	Extremely cobbly sandy loam, extremely cobbly loam.	GM	A-1	40-55	40-55	30-45	20-35	10-25	20-25	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3091*: Packer, cobbly--	0-10	Extremely cobbly loam.	GM-GC	A-2	40-50	35-50	20-35	15-30	10-25	20-30	5-10
	10-21	Extremely cobbly clay loam, extremely cobbly loam.	GC	A-2	45-55	40-55	30-45	25-40	15-30	30-40	10-15
	21-60	Extremely cobbly sandy loam, extremely cobbly loam, very cobbly loam.	GM	A-1, A-2	40-50	40-55	30-50	20-45	10-35	20-25	NP-5
Newlands-----	0-10	Loam-----	CL-ML, CL	A-4, A-6	0-5	85-95	80-90	70-85	50-65	25-35	5-15
	10-46	Gravelly clay loam.	GC, CL	A-6	5-10	60-75	55-70	50-65	40-55	35-40	15-20
	46	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3092*: Packer-----	0-10	Extremely gravelly loam.	GM-GC, GP-GC	A-2	15-25	30-40	15-30	10-25	5-20	20-30	5-10
	10-21	Extremely cobbly clay loam, extremely cobbly loam.	GC	A-2	40-55	40-55	30-45	25-40	15-30	30-40	10-15
	21-60	Extremely cobbly sandy loam, extremely cobbly loam.	GM	A-1	40-55	40-55	30-45	20-35	10-25	20-25	NP-5
Hapgood-----	0-17	Gravelly loam----	SM-SC	A-4	5-10	70-80	60-75	55-70	35-50	25-30	5-10
	17-40	Very gravelly loam.	GC, GM-GC	A-2	5-25	50-60	35-50	30-40	20-35	25-35	5-15
	40-60	Very cobbly loam, very gravelly loam.	GC, GM-GC	A-2	15-40	55-65	50-60	35-45	25-35	25-35	5-15
Rock outcrop.											
3093*: Packer-----	0-10	Very gravelly loam.	GM-GC	A-2	5-10	45-60	35-50	30-45	20-35	20-30	5-10
	10-21	Extremely cobbly clay loam, extremely cobbly loam.	GC	A-2	40-55	40-55	30-45	25-40	15-30	30-40	10-15
	21-60	Extremely cobbly sandy loam, extremely cobbly loam.	GM	A-1	40-55	40-55	30-45	20-35	10-25	20-25	NP-5
Layview-----	0-3	Very gravelly sandy loam.	GM-GC	A-2	10-15	35-60	30-55	20-35	10-20	25-30	5-10
	3-12	Very gravelly loam, very gravelly clay loam.	GC	A-2, A-6	10-15	35-60	30-55	25-45	20-40	30-40	15-20
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3093*: Hapgood-----	0-17	Fine sandy loam	SM	A-2, A-4	0	80-95	75-95	55-65	30-40	25-30	NP-5
	17-40	Very gravelly loam, very gravelly fine sandy loam.	GM-GC, GC	A-2	0-10	50-60	45-55	35-50	25-35	25-30	5-10
	40-60	Very cobbly loam, very gravelly sandy loam.	GM	A-1, A-2	15-40	55-65	50-60	35-45	20-35	20-30	NP-5
3094*: Packer-----	0-10	Extremely gravelly sandy loam.	GM-GC, GP-GC	A-2	15-25	30-40	15-30	10-25	5-20	20-30	5-10
	10-21	Extremely cobbly clay loam, extremely cobbly loam.	GC	A-2	40-55	40-55	30-45	25-40	15-30	30-40	10-15
	21-60	Extremely cobbly sandy loam, extremely cobbly loam.	GM	A-1	40-55	40-55	30-45	20-35	10-25	20-25	NP-5
Hapgood-----	0-17	Gravelly loam----	SM-SC	A-4	5-10	70-80	60-75	55-70	35-50	25-30	5-10
	17-40	Very gravelly loam.	GC, GM-GC	A-2	5-25	50-60	35-50	30-40	20-35	25-35	5-15
	40-60	Very cobbly loam, very gravelly loam.	GC, GM-GC	A-2	15-40	55-65	50-60	35-45	25-35	25-35	5-15
Torro-----	0-10	Very gravelly loam.	GM	A-1, A-2	0	45-55	35-50	30-40	20-35	20-25	NP-5
	10-34	Extremely gravelly loam, extremely gravelly clay loam, extremely gravelly sandy clay loam.	GM-GC, GC, GP-GC	A-2	0	20-35	15-25	10-20	5-15	25-35	5-15
	34-60	Extremely gravelly sandy loam, extremely gravelly loamy coarse sand.	GP-GM	A-1	5-15	30-40	20-30	10-20	5-10	---	NP
3101*: Hackwood-----	0-18	Gravelly loam----	CL	A-6	40-50	75-80	65-80	60-75	50-65	25-35	10-15
	18-32	Gravelly loam, gravelly silt loam.	GM-GC, SM-SC, CL-ML, CL	A-4, A-6	0	60-80	50-75	40-70	35-65	25-35	5-15
	32-60	Very gravelly clay loam, very gravelly silty clay loam, very gravelly loam.	GC	A-2, A-6	0	40-60	35-50	30-45	25-40	35-40	15-20

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3101*: Newlands-----	0-10	Extremely bouldery loam.	CL-ML, CL, SM-SC, SC	A-4, A-6	50-65	75-90	65-80	60-75	45-60	25-35	5-15
	10-46	Gravelly clay loam.	GC, CL	A-6	5-10	60-75	55-70	50-65	40-55	35-40	15-20
	46	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Hapgood-----	0-17	Gravelly loam----	SM-SC	A-4	5-10	70-80	60-75	55-70	35-50	25-30	5-10
	17-40	Very gravelly loam.	GC, GM-GC	A-2	5-25	50-60	35-50	30-40	20-35	25-35	5-15
	40-60	Very cobbly loam, very gravelly loam.	GC, GM-GC	A-2	15-40	55-65	50-60	35-45	25-35	25-35	5-15
3111*: Ninemile-----	0-9	Extremely cobbly loam.	GM-GC	A-4, A-2	45-65	30-50	30-45	25-45	20-40	25-30	5-10
	9-19	Clay, gravelly clay.	CH	A-7	0-15	70-100	65-100	60-90	50-80	55-65	30-35
	19-23	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Zoesta-----	0-7	Cobbly loam-----	CL-ML, ML	A-4	25-40	80-90	75-90	65-80	50-65	20-30	NP-10
	7-23	Clay-----	CL, CH	A-7	0-10	90-100	85-95	75-90	65-80	45-60	20-30
	23-31	Gravelly clay loam, gravelly clay.	GC, CL	A-6, A-7	0	60-75	55-70	50-65	40-55	35-50	15-25
	31-60	Very gravelly clay loam, very gravelly loam.	GC	A-2	0	45-55	30-45	25-40	20-35	30-40	10-15
Itca-----	0-9	Extremely stony loam.	GM-GC, GC	A-4, A-6	30-50	60-75	50-65	45-60	35-50	25-35	5-15
	9-17	Very cobbly clay loam, very gravelly clay, extremely gravelly clay.	CL, GC	A-7, A-2	0-55	40-80	30-75	25-70	20-60	40-50	15-25
	17-21	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3120*: Walti-----	0-4	Very cobbly loam	CL-ML, ML	A-4	30-40	75-90	65-80	55-70	50-60	20-30	NP-10
	4-10	Clay loam, gravelly clay loam.	CL	A-6	0-10	90-100	65-90	60-80	50-65	35-40	15-20
	10-30	Clay, gravelly clay.	CH, MH	A-7	0-10	90-100	65-90	60-80	50-75	55-65	25-35
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Softscrabble----	0-16	Very cobbly fine sandy loam.	GM-GC, SM-SC	A-4	40-50	65-80	60-75	50-65	35-50	20-30	5-10
	16-30	Very cobbly clay loam.	GC	A-6, A-7	30-45	60-75	50-65	45-60	35-50	35-45	15-20
	30-60	Very gravelly clay loam.	GC	A-2, A-6, A-7	0-5	45-60	35-50	30-45	25-40	35-45	15-20

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3120*: Chad-----	0-11	Cobbly loam-----	SM-SC, CL-ML	A-4	15-25	70-80	65-75	40-60	35-55	20-30	5-10
	11-43	Gravelly clay, gravelly clay loam, clay.	CL, MH, SM, SC	A-7	0-5	75-95	55-85	45-75	40-65	40-55	15-25
	43-47	Weathered bedrock	---	---	---	---	---	---	---	---	---
3121*: Walti-----	0-4	Extremely cobbly loam.	GM-GC	A-2	50-60	40-55	25-40	20-35	15-30	20-30	5-10
	4-10	Clay loam, gravelly clay loam.	CL	A-6	0-10	90-100	65-90	60-80	50-65	35-40	15-20
	10-30	Gravelly clay, clay.	CH, MH	A-7	0-10	90-100	65-90	60-80	50-75	55-65	25-35
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Softscrabble----	0-16	Very cobbly loam	GM-GC, SM-SC	A-4	40-50	65-80	60-75	50-65	35-50	20-30	5-10
	16-30	Very cobbly clay loam.	GC	A-6, A-7	30-45	60-75	50-65	45-60	35-50	35-45	15-20
	30-60	Very gravelly clay loam.	GC	A-2, A-6, A-7	0-5	45-60	35-50	30-45	25-40	35-45	15-20
Bucan-----	0-4	Very cobbly loam	GC, CL	A-6	25-50	55-70	50-65	45-60	35-55	30-35	10-15
	4-18	Clay-----	CH	A-7	0-10	85-95	80-90	75-85	65-75	50-60	35-45
	18-52	Cobbly clay, gravelly clay loam, gravelly clay.	CL	A-7	10-30	75-90	70-85	60-70	50-60	40-50	25-35
	52-56	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3122*: Walti-----	0-4	Gravelly loam----	SM-SC, GM-GC, CL-ML	A-4	5-10	65-80	55-75	40-60	35-55	20-30	5-10
	4-10	Clay loam, gravelly clay loam.	CL	A-6	0-10	90-100	65-90	60-80	50-65	35-40	15-20
	10-30	Clay, gravelly clay.	CH, MH	A-7	0-10	90-100	65-90	60-80	50-75	55-65	25-35
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Sumine-----	0-10	Cobbly loam-----	CL-ML	A-4	20-30	80-90	75-85	65-75	50-65	20-30	5-10
	10-30	Very gravelly clay loam, very cobbly clay loam, very gravelly loam.	GC	A-2, A-6, A-7	15-40	45-70	35-65	30-50	25-45	35-45	15-25
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Softscrabble----	0-16	Cobbly loam-----	SM-SC	A-4	25-40	75-90	70-85	55-70	35-50	20-30	5-10
	16-30	Very cobbly clay loam.	GC	A-6, A-7	30-45	60-75	50-65	45-60	35-50	35-45	15-20
	30-60	Very gravelly clay loam.	GC	A-2, A-6, A-7	0-5	45-60	35-50	30-45	25-40	35-45	15-20

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3123*:											
Walti-----	0-4	Very cobbly loam	CL-ML, ML	A-4	30-40	75-90	65-80	55-70	50-60	20-30	NP-10
	4-10	Clay loam, gravelly clay loam.	CL	A-6	0-10	90-100	65-90	60-80	50-65	35-40	15-20
	10-30	Clay, gravelly clay.	CH, MH	A-7	0-10	90-100	65-90	60-80	50-75	55-65	25-35
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Softscrabble----	0-16	Very gravelly loam.	GM-GC	A-2	0-5	45-60	35-50	30-45	20-35	20-30	5-10
	16-30	Very cobbly clay loam.	GC	A-6, A-7	30-45	60-75	50-65	45-60	35-50	35-45	15-20
	30-60	Gravelly clay loam.	GC, CL	A-6, A-7	5-10	65-80	55-70	50-65	40-55	35-45	15-20
Itca-----	0-2	Extremely stony loam.	GM-GC, GC	A-4, A-6	30-50	60-75	50-65	45-60	35-50	25-35	5-15
	2-14	Very cobbly clay loam, very gravelly clay, extremely gravelly clay.	CL, GC	A-7, A-2	0-55	40-80	30-75	25-70	20-60	40-50	15-25
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3125*:											
Walti-----	0-4	Very cobbly loam	CL-ML, ML	A-4	30-40	75-90	65-80	55-70	50-60	20-30	NP-10
	4-10	Clay loam, gravelly clay loam.	CL	A-6	0-10	90-100	65-90	60-80	50-65	35-40	15-20
	10-30	Clay, gravelly clay.	CH, MH	A-7	0-10	90-100	65-90	60-80	50-75	55-65	25-35
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Softscrabble----	0-16	Very cobbly fine sandy loam.	GM-GC, SM-SC	A-4	40-50	65-80	60-75	50-65	35-50	20-30	5-10
	16-30	Very cobbly clay loam.	GC	A-6, A-7	30-45	60-75	50-65	45-60	35-50	35-45	15-20
	30-60	Very gravelly clay loam.	GC	A-2, A-6, A-7	0-5	45-60	35-50	30-45	25-40	35-45	15-20
Robson-----	0-2	Very cobbly loam	GM-GC, GC, SM-SC, SC	A-2	30-50	55-75	50-65	30-50	25-35	25-35	5-15
	2-5	Very cobbly clay loam.	GC	A-7	30-45	55-75	50-60	40-60	35-50	40-45	15-20
	5-15	Very cobbly clay, extremely cobbly clay.	GC, GM	A-7	50-80	60-70	50-65	40-55	35-50	45-55	20-25
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3130*: Itca-----	0-9	Very gravelly loam.	GC, GM-GC	A-2	5-10	50-60	35-50	30-40	25-35	25-35	5-15
	9-17	Very gravelly clay, very gravelly clay loam.	GC	A-7, A-2	10-20	50-65	40-50	35-45	25-40	40-50	15-25
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Clan Alpine-----	0-10	Very gravelly loam.	GM-GC	A-2, A-4	15-25	60-70	50-60	35-45	30-40	25-30	5-10
	10-39	Very cobbly loam, very cobbly clay loam, very gravelly clay loam.	GC	A-2, A-6	15-35	50-70	35-60	25-50	20-40	30-40	10-20
	39	Weathered bedrock	---	---	---	---	---	---	---	---	---
Reluctan-----	0-9	Very cobbly loam	GM-GC	A-2, A-4	30-50	55-65	45-60	40-55	30-45	25-30	5-10
	9-27	Gravelly loam, gravelly clay loam.	GC, CL	A-6, A-7	0-15	65-85	60-75	55-75	40-60	35-45	15-20
	27	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3131*: Itca-----	0-9	Extremely stony loam.	GM-GC, GC	A-4, A-6	30-50	60-75	50-65	45-60	35-50	25-35	5-15
	9-17	Very cobbly clay loam, very gravelly clay, extremely gravelly clay.	CL, GC	A-7, A-2	0-55	40-80	30-75	25-70	20-60	40-50	15-25
	17-21	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Ninemile-----	0-2	Extremely cobbly loam.	GM-GC	A-4, A-2	45-65	30-50	30-45	25-45	20-40	25-30	5-10
	2-14	Clay, gravelly clay.	CH	A-7	0-15	70-100	65-100	60-90	50-80	55-65	30-35
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
3132*: Itca-----	0-2	Extremely stony loam.	GM-GC, GC	A-4, A-6	30-50	60-75	50-65	45-60	35-50	25-35	5-15
	2-14	Very cobbly clay loam, very gravelly clay, extremely gravelly clay.	CL, GC	A-7, A-2	0-55	40-80	30-75	25-70	20-60	40-50	15-25
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.



TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3132*: Softscrabble----	0-16	Cobbly loam-----	SM-SC	A-4	25-40	75-90	70-85	55-70	35-50	20-30	5-10
	16-30	Very cobbly clay loam.	GC	A-6, A-7	30-45	60-75	50-65	45-60	35-50	35-45	15-20
	30-60	Very gravelly clay loam.	GC	A-2, A-6, A-7	0-5	45-60	35-50	30-45	25-40	35-45	15-20
Cleavage-----	0-4	Very cobbly loam	GM-GC, GC	A-2, A-4, A-6	30-45	55-75	45-65	40-60	25-50	25-35	5-15
	4-18	Very cobbly clay loam, extremely cobbly sandy clay loam, very gravelly clay loam.	GC	A-2	25-45	40-55	30-45	25-45	20-35	30-45	10-20
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3134*: Itca-----	0-9	Extremely cobbly fine sandy loam.	SM-SC	A-2	55-65	60-75	45-55	35-50	20-35	20-30	5-10
	9-17	Very gravelly clay, very gravelly clay loam.	GC	A-7, A-2	10-20	50-65	40-50	35-45	25-40	40-50	15-25
	17-21	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Clan Alpine-----	0-12	Extremely cobbly loam.	GM-GC	A-2	45-55	35-45	25-35	20-30	15-25	20-25	5-10
	12-38	Very cobbly loam, very cobbly clay loam, very gravelly clay loam.	GC	A-2, A-6	15-35	50-70	35-60	25-50	20-40	30-40	10-20
	38-42	Weathered bedrock	---	---	---	---	---	---	---	---	---
Torro-----	0-10	Very gravelly loam.	GM	A-1, A-2	0	45-55	35-50	30-40	20-35	20-25	NP-5
	10-38	Extremely gravelly loam, extremely gravelly clay loam, extremely gravelly sandy clay loam.	GM-GC, GC, GP-GC	A-2	0	20-35	15-25	10-20	5-15	25-35	5-15
	38-60	Extremely gravelly sandy loam, extremely gravelly loamy coarse sand.	GP-GM	A-1	5-15	30-40	20-30	10-20	5-10	---	NP
3135*: Itca-----	0-2	Stony loam-----	CL, CL-ML	A-4, A-6	25-60	70-90	65-85	60-70	50-60	25-35	5-15
	2-14	Very cobbly clay loam, very gravelly clay, extremely gravelly clay.	CL, GC	A-7, A-2	0-55	40-80	30-75	25-70	20-60	40-50	15-25
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3135*: Clan Alpine-----	0-10	Very gravelly loam.	GM-GC	A-2, A-4	15-25	60-70	50-60	35-45	30-40	25-30	5-10
	10-39	Very cobbly loam, very cobbly clay loam, very gravelly clay loam.	GC	A-2, A-6	15-35	50-70	35-60	25-50	20-40	30-40	10-20
	39	Weathered bedrock	---	---	---	---	---	---	---	---	---
Rock outcrop.											
3136*: Itca-----	0-2	Very cobbly loam	GM-GC, GC	A-4, A-6	30-50	60-75	50-65	45-60	35-50	25-35	5-15
	2-14	Very cobbly clay loam, very gravelly clay, extremely gravelly clay.	CL, GC	A-7, A-2	0-55	40-80	30-75	25-70	20-60	40-50	15-25
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Roca-----	0-4	Very cobbly loam	CL	A-6	50-60	85-100	75-85	70-80	50-60	25-35	10-15
	4-24	Very gravelly clay loam, very gravelly clay.	GC, SC	A-2	0-10	60-75	30-50	25-45	20-35	45-60	20-30
	24	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Reluctan-----	0-9	Cobbly loam-----	SM-SC, CL-ML	A-4	15-30	80-90	70-90	60-85	40-70	20-30	5-10
	9-27	Gravelly loam, gravelly clay loam.	GC, CL	A-6, A-7	0-15	65-85	60-75	55-75	40-60	35-45	15-20
	27	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3137*: Itca-----	0-2	Stony loam-----	CL, CL-ML	A-4, A-6	25-60	70-90	65-85	60-70	50-60	25-35	5-15
	2-14	Very cobbly clay loam, very gravelly clay, extremely gravelly clay.	CL, GC	A-7, A-2	0-55	40-80	30-75	25-70	20-60	40-50	15-25
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Reluctan-----	0-9	Very cobbly loam	GM-GC	A-2, A-4	30-50	55-65	45-60	40-55	30-45	25-30	5-10
	9-27	Gravelly loam, gravelly clay loam.	GC, CL	A-6, A-7	0-15	65-85	60-75	55-75	40-60	35-45	15-20
	27	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct						
3137*: Walti-----	0-4	Cobbly loam-----	CL-ML	A-4	25-40	70-85	65-80	55-70	50-60	20-30	5-10
	4-10	Clay loam, gravelly clay loam.	CL	A-6	0-10	90-100	65-90	60-80	50-65	35-40	15-20
	10-30	Clay, gravelly clay.	CH, MH	A-7	0-10	90-100	65-90	60-80	50-75	55-65	25-35
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3140*: Sodhouse-----	0-7	Very fine sandy loam.	ML, SM	A-4	0	90-100	85-100	75-95	45-65	15-25	NP-5
	7-14	Very fine sandy loam, silt loam, loam.	ML	A-4	0	80-100	75-100	60-90	50-60	20-25	NP-5
	14-42	Indurated-----	---	---	---	---	---	---	---	---	---
	42-60	Gravelly sandy loam.	SM	A-2, A-4	0-10	65-80	60-75	50-65	25-40	15-25	NP-5
Tenabo-----	0-4	Very fine sandy loam.	ML	A-4	0	95-100	90-100	85-95	75-85	25-35	NP-10
	4-15	Clay loam, silty clay loam, gravelly clay loam.	CL	A-6	0	95-100	70-95	60-90	50-85	30-40	15-25
	15-28	Indurated-----	---	---	---	---	---	---	---	---	---
	28-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP-GM, GM	A-1	5-25	40-60	35-55	25-35	5-20	---	NP
Desatoya Variant	0-3	Gravelly fine sandy loam.	SM-SC	A-2, A-4	0	70-85	55-70	50-65	25-40	20-30	5-10
	3-13	Gravelly clay loam, gravelly sandy clay loam.	SC, CL	A-6, A-7	0	70-85	55-70	45-60	40-55	35-45	15-20
	13-26	Very gravelly sandy loam.	GM	A-1	0	45-60	35-50	25-40	10-25	15-20	NP-5
	26-60	Very gravelly sand.	GP-GM, SP-SM	A-1	0	45-60	35-50	20-35	5-10	---	NP
3151*: Robson-----	0-2	Very cobbly loam	GM-GC, GC, SM-SC, SC	A-2	30-50	55-75	50-65	30-50	25-35	25-35	5-15
	2-5	Very cobbly clay loam.	GC	A-7	30-45	55-75	50-60	40-60	35-50	40-45	15-20
	5-15	Very cobbly clay, extremely cobbly clay.	GC, GM	A-7	50-80	60-70	50-65	40-55	35-50	45-55	20-25
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Ninemile-----	0-7	Extremely cobbly loam.	GM-GC	A-4, A-2	45-65	30-50	30-45	25-45	20-40	25-30	5-10
	7-19	Clay, gravelly clay.	CH	A-7	0-15	70-100	65-100	60-90	50-80	55-65	30-35
	19-23	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3151*: Ravenswood-----	0-9	Gravelly loam----	GM-GC, SM-SC	A-2, A-4	0-15	60-75	55-70	45-65	30-45	25-30	5-10
	9-13	Very gravelly clay loam.	GC	A-2	5-15	45-60	35-50	30-45	20-35	40-50	15-25
	13-36	Very gravelly clay, very gravelly clay loam.	GC	A-2, A-7	5-15	45-60	35-50	30-45	25-40	40-55	20-30
	36	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3153*: Robson-----	0-2	Cobbly loam-----	SM-SC, SC, CL-ML, CL	A-4, A-6	15-45	90-95	65-95	55-65	45-60	25-35	5-15
	2-15	Very cobbly clay, extremely cobbly clay.	GC	A-7	50-80	60-70	50-65	40-55	35-50	45-55	20-30
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Locane-----	0-6	Gravelly loam----	SM-SC	A-4, A-2	0-5	70-85	55-70	45-60	30-50	20-30	5-10
	6-14	Very gravelly clay loam.	GC	A-2, A-7, A-6	0-10	50-65	35-50	30-45	25-40	35-45	15-20
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Softscrabble----	0-16	Gravelly loam----	SM-SC	A-4	0-5	70-85	55-70	45-60	35-50	20-30	5-10
	16-30	Very cobbly clay loam.	GC	A-6, A-7	30-45	60-75	50-65	45-60	35-50	35-45	15-20
	30-60	Gravelly clay loam.	GC, CL	A-6, A-7	5-10	65-80	55-70	50-65	40-55	35-45	15-20
3154*: Robson-----	0-2	Very gravelly loam.	GM-GC, GC	A-2	5-15	40-50	30-40	20-35	15-30	25-35	5-15
	2-15	Very cobbly clay, extremely cobbly clay.	GC, GM	A-7	50-80	60-70	50-65	40-55	35-50	45-55	20-25
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Locane-----	0-6	Very gravelly fine sandy loam.	GM-GC	A-2	5-15	50-65	30-45	25-40	15-30	20-30	5-10
	6-14	Very gravelly clay loam.	GC	A-2, A-7, A-6	0-10	50-65	35-50	30-45	25-40	35-45	15-20
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
3155*: Robson-----	0-2	Very gravelly loam.	GM-GC, GC	A-2	5-15	40-50	30-40	20-35	15-30	25-35	5-15
	2-15	Very cobbly clay, extremely cobbly clay.	GC, GM	A-7	50-80	60-70	50-65	40-55	35-50	45-55	20-25
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3155*:											
Itca-----	0-9	Very gravelly loam.	GC, GM-GC	A-2	5-10	50-60	35-50	30-40	25-35	25-35	5-15
	9-17	Very gravelly clay, very gravelly clay loam.	GC	A-7, A-2	10-20	50-65	40-50	35-45	25-40	40-50	15-25
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Softscrabble----	0-16	Gravelly loam----	SM-SC	A-4	0-5	70-85	55-70	45-60	35-50	20-30	5-10
	16-30	Very cobbly clay loam.	GC	A-6, A-7	30-45	60-75	50-65	45-60	35-50	35-45	15-20
	30-60	Gravelly clay loam.	GC, CL	A-6, A-7	5-10	65-80	55-70	50-65	40-55	35-45	15-20
3170*:											
Teguro-----	0-6	Very gravelly loam.	GM	A-1, A-2, A-4	10-35	30-55	25-50	20-45	15-40	15-25	NP-5
	6-16	Gravelly clay loam, gravelly loam.	SC	A-2, A-6	0-10	65-80	50-75	35-60	30-50	30-40	15-20
	16-20	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rubble land.											
Punchbowl-----	0-3	Cobbly loam-----	SM, ML	A-4	25-40	80-90	75-85	60-75	40-55	15-25	NP-5
	3-7	Loam, gravelly loam.	SC, GC, CL	A-6	0-5	70-100	65-95	60-85	45-55	25-35	10-15
	7-11	Gravelly clay loam, gravelly sandy clay loam.	GC	A-6, A-7	0-5	55-65	50-60	45-55	35-45	35-45	15-20
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3181*:											
Newlands-----	0-10	Loam-----	CL-ML, CL	A-4, A-6	0-5	85-95	80-90	70-85	50-65	25-35	5-15
	10-46	Gravelly clay loam.	GC, CL	A-6	5-10	60-75	55-70	50-65	40-55	35-40	15-20
	46	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Packer-----	0-10	Very gravelly loam.	GM-GC	A-2	5-10	45-60	35-50	30-45	20-35	20-30	5-10
	10-21	Extremely cobbly clay loam, extremely cobbly loam.	GC	A-2	40-55	40-55	30-45	25-40	15-30	30-40	10-15
	21-60	Extremely cobbly sandy loam, extremely cobbly loam.	GM	A-1	40-55	40-55	30-45	20-35	10-25	20-25	NP-5
Hapgood-----	0-17	Gravelly loam----	SM-SC	A-4	5-10	70-80	60-75	55-70	35-50	25-30	5-10
	17-40	Very gravelly loam.	GC, GM-GC	A-2	5-25	50-60	35-50	30-40	20-35	25-35	5-15
	40-60	Very cobbly loam, very gravelly loam.	GC, GM-GC	A-2	15-40	55-65	50-60	35-45	25-35	25-35	5-15

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3182*: Newlands-----	0-10	Extremely bouldery loam.	CL-ML, CL, SM-SC, SC	A-4, A-6	50-65	75-90	65-80	60-75	45-60	25-35	5-15
	10-46	Gravelly clay loam.	GC, CL	A-6	5-10	60-75	55-70	50-65	40-55	35-40	15-20
	46	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Packer-----	0-10	Extremely gravelly loam.	GM-GC, GP-GC	A-2	15-25	30-40	15-30	10-25	5-20	20-30	5-10
	10-21	Extremely cobbly clay loam, extremely cobbly loam.	GC	A-2	40-55	40-55	30-45	25-40	15-30	30-40	10-15
	21-60	Extremely cobbly sandy loam, extremely cobbly loam.	GM	A-1	40-55	40-55	30-45	20-35	10-25	20-25	NP-5
Hapgood-----	0-17	Gravelly loam----	SM-SC	A-4	5-10	70-80	60-75	55-70	35-50	25-30	5-10
	17-40	Very gravelly loam.	GC, GM-GC	A-2	5-25	50-60	35-50	30-40	20-35	25-35	5-15
	40-60	Very cobbly loam, very gravelly loam.	GC, GM-GC	A-2	15-40	55-65	50-60	35-45	25-35	25-35	5-15
3190*: Softscrabble----	0-16	Very cobbly fine sandy loam.	GM-GC, SM-SC	A-4	40-50	65-80	60-75	50-65	35-50	20-30	5-10
	16-30	Very cobbly clay loam.	GC	A-6, A-7	30-45	60-75	50-65	45-60	35-50	35-45	15-20
	30-60	Very gravelly clay loam.	GC	A-2, A-6, A-7	0-5	45-60	35-50	30-45	25-40	35-45	15-20
Clanalpine-----	0-10	Very gravelly loam.	GM-GC	A-2, A-4	15-25	60-70	50-60	35-45	30-40	25-30	5-10
	10-39	Very cobbly loam, very cobbly clay loam, very gravelly clay loam.	GC	A-2, A-6	15-35	50-70	35-60	25-50	20-40	30-40	10-20
	39	Weathered bedrock	---	---	---	---	---	---	---	---	---
Walti-----	0-4	Very cobbly loam	CL-ML, ML	A-4	30-40	75-90	65-80	55-70	50-60	20-30	NP-10
	4-10	Clay loam, gravelly clay loam.	CL	A-6	0-10	90-100	65-90	60-80	50-65	35-40	15-20
	10-30	Clay, gravelly clay.	CH, MH	A-7	0-10	90-100	65-90	60-80	50-75	55-65	25-35
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3192*: Softscrabble----	0-16	Very gravelly fine sandy loam.	GM-GC	A-2	0-5	45-60	35-50	25-45	10-25	20-30	5-10
	16-30	Very cobbly clay loam.	GC	A-6, A-7	30-45	60-75	50-65	45-60	35-50	35-45	15-20
	30-60	Gravelly clay loam.	GC, CL	A-6, A-7	5-10	65-80	55-70	50-65	40-55	35-45	15-20

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3192*: Walti-----	0-4	Extremely cobbly fine sandy loam.	GM-GC	A-2	50-60	40-55	25-40	20-35	10-25	20-30	5-10
	4-10	Clay loam, gravelly clay loam.	CL	A-6	0-10	90-100	65-90	60-80	50-65	35-40	15-20
	10-30	Gravelly clay, clay.	CH, MH	A-7	0-10	90-100	65-90	60-80	50-75	55-65	25-35
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Cleavage-----	0-4	Very gravelly fine sandy loam.	GM, SM	A-1	0-10	50-70	30-50	20-45	15-25	20-25	NP-5
	4-18	Very cobbly clay loam, extremely gravelly clay loam, very gravelly loam.	GC	A-2	0-45	40-55	30-45	25-45	20-35	30-45	10-20
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3200----- Dewar	0-4	Gravelly loam----	GC, CL, SC	A-6	0-5	60-90	55-80	45-80	35-70	25-35	10-15
	4-14	Gravelly silty clay loam, gravelly clay loam.	GC, CL	A-6, A-7	0-10	65-90	60-80	55-80	45-75	35-45	15-20
	14-50	Indurated-----	---	---	---	---	---	---	---	---	---
3210*: Typic Argixerolls----	0-4	Gravelly coarse sandy loam.	SM-SC	A-2	0-5	80-95	50-75	30-50	20-30	20-30	5-10
	4-15	Sandy clay loam, loam.	SC	A-2, A-6	0	85-100	85-95	60-85	30-50	30-35	10-15
	15	Weathered bedrock	---	---	---	---	---	---	---	---	---
Torripsammentic Haploxerolls----	0-2	Cobbly loamy coarse sand.	SM	A-1	30-45	90-100	85-95	35-50	15-25	---	NP
	2-7	Loamy coarse sand, coarse sand, gravelly loamy coarse sand.	SM	A-1	0	90-100	50-95	35-50	15-25	---	NP
	7	Weathered bedrock	---	---	---	---	---	---	---	---	---
Glean-----	0-6	Very gravelly loam.	GM	A-1, A-2	0-10	30-55	25-50	20-40	10-30	20-30	NP-5
	6-39	Very gravelly sandy loam, very gravelly loam.	GM	A-1, A-2	0-25	30-65	25-60	20-50	10-35	20-30	NP-5
	39-51	Very cobbly sandy loam, very cobbly loam, very gravelly sandy loam.	GM, SM	A-1, A-2	20-45	45-70	40-65	30-55	15-25	20-30	NP-5
	51	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3231*: Stingdorn, moderately steep-----	0-7	Extremely cobbly loam.	GM, GM-GC	A-1, A-2	50-60	45-60	35-50	30-45	15-30	15-25	NP-10
	7-15	Very cobbly clay loam.	GC	A-6	30-50	60-75	50-65	45-60	35-50	35-40	15-20
	15-20	Indurated-----	---	---	---	---	---	---	---	---	---
	20	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Stingdorn, moderately sloping-----	0-7	Very gravelly loam.	GM, GM-GC	A-1, A-2	5-10	45-60	35-50	30-45	20-35	15-25	NP-10
	7-15	Very cobbly clay loam.	GC	A-6	30-50	60-75	50-65	45-60	35-50	35-40	15-20
	15-20	Indurated-----	---	---	---	---	---	---	---	---	---
	20	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Hooplite-----	0-4	Very gravelly loam.	GM-GC	A-2	0-10	45-60	35-50	30-45	20-35	20-30	5-10
	4-8	Very gravelly loam, very gravelly clay loam.	GC	A-2, A-6	0-15	45-60	35-50	30-45	25-40	30-40	10-15
	8	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3251*: Caphor-----	0-7	Fine sandy loam	SM-SC, SM	A-2, A-4	0	90-100	80-95	65-85	25-40	20-30	NP-10
	7-17	Sandy loam, fine sandy loam.	SM-SC, SM	A-2, A-4	0	90-100	80-95	65-85	25-40	20-30	NP-10
	17-35	Sandy loam, fine sandy loam.	SM, SM-SC	A-2	0	90-100	80-95	65-85	20-35	20-30	NP-10
	35-60	Stratified gravelly coarse sand to very gravelly loamy sand.	GP-GM, GM, SP-SM, SM	A-1	0-10	50-75	35-60	20-35	5-20	---	NP
Tenabo-----	0-4	Very gravelly fine sandy loam.	GM	A-1, A-2	5-10	40-55	35-50	25-45	20-30	15-25	NP-5
	4-15	Silty clay loam, clay loam, gravelly clay loam.	CL	A-6	0	95-100	70-90	60-90	50-80	30-40	10-20
	15-28	Indurated-----	---	---	---	---	---	---	---	---	---
	28-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP-GM, GM	A-1	5-25	40-60	35-55	25-35	5-20	---	NP

See footnote at end of table.



TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct						
3251*: Spasprey-----	0-5	Gravelly fine sandy loam.	SM, SM-SC	A-1, A-2	0-5	70-90	55-70	45-60	20-35	15-25	NP-10
	5-26	Loam, clay loam, sandy clay loam.	CL, SC	A-6	0-5	95-100	90-100	70-95	45-65	30-40	10-20
	26-33	Cemented-----	---	---	---	---	---	---	---	---	---
	33-60	Fine sandy loam, sandy loam, loamy sand.	SM	A-2	0	90-100	85-95	50-65	15-30	---	NP
3252*: Caphor-----	0-7	Fine sandy loam	SM-SC, SM	A-2, A-4	0	90-100	80-95	65-85	25-40	20-30	NP-10
	7-17	Fine sandy loam, sandy loam.	SM-SC, SM	A-2, A-4	0	90-100	80-95	65-85	20-40	20-30	NP-10
	17-35	Fine sandy loam, sandy loam.	SM, SM-SC	A-2	0	90-100	80-95	65-85	20-35	20-30	NP-10
	35-60	Stratified gravelly coarse sand to very gravelly loamy sand.	GP-GM, GM, SP-SM, SM	A-1	0-10	50-75	35-60	20-35	5-20	---	NP
Batan-----	0-5	Silt loam-----	ML	A-4	0	100	100	95-100	85-95	30-35	5-10
	5-68	Stratified silt loam to silty clay loam.	CL	A-6	0	100	100	95-100	85-95	30-40	15-25
Unsel-----	0-8	Gravelly fine sandy loam.	SM-SC	A-2	0	75-85	55-75	40-60	25-35	25-30	5-10
	8-18	Gravelly clay loam, gravelly sandy clay loam.	SC	A-6	0	75-85	55-75	45-60	35-45	35-40	15-20
	18-31	Gravelly sandy loam, gravelly sandy clay loam.	SM-SC	A-2	0	60-75	50-70	35-50	20-35	20-30	5-10
	31-60	Very gravelly sand, very gravelly loamy sand, extremely gravelly sand.	GP-GM, GP	A-1	0	40-50	20-35	10-25	0-10	---	NP
3253*: Caphor-----	0-7	Gravelly fine sandy loam.	SM-SC, SM	A-2, A-1	0-5	65-80	55-75	45-65	15-30	20-30	NP-10
	7-17	Sandy loam, fine sandy loam.	SM-SC, SM	A-2, A-4	0	90-100	80-95	65-85	25-40	20-30	NP-10
	17-35	Sandy loam, fine sandy loam.	SM, SM-SC	A-2	0	90-100	80-95	65-85	20-35	20-30	NP-10
	35-60	Stratified gravelly coarse sand to very gravelly loamy sand.	GP-GM, GM, SP-SM, SM	A-1	0-10	50-75	35-60	20-35	5-20	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3253*: Caphor, moderately saline-----	0-7	Fine sandy loam	SM-SC, SM	A-2, A-4	0	90-100	80-95	65-85	25-40	20-30	NP-10
	7-17	Fine sandy loam, sandy loam.	SM-SC, SM	A-2, A-4	0	90-100	80-95	65-85	20-40	20-30	NP-10
	17-35	Fine sandy loam, sandy loam.	SM, SM-SC	A-2	0	90-100	80-95	65-85	20-35	20-30	NP-10
	35-60	Stratified gravelly coarse sand to very gravelly loamy sand.	GP-GM, GM, SP-SM, SM	A-1	0-10	50-75	35-60	20-35	5-20	---	NP
3270----- Koyen	0-4	Fine sandy loam	SM	A-4	0	90-100	85-100	75-90	35-50	15-25	NP-5
	4-14	Sandy loam-----	SM	A-4	0	90-95	85-95	50-75	35-50	15-25	NP-5
	14-60	Stratified loam to gravelly loamy sand.	SM	A-2, A-4	0	80-90	75-85	50-60	25-40	15-25	NP-5
3310*: Spasprey-----	0-5	Gravelly fine sandy loam.	SM, SM-SC	A-1, A-2	0-5	70-90	55-70	45-60	20-35	15-25	NP-10
	5-26	Loam, clay loam, sandy clay loam.	CL, SC	A-6	0-5	95-100	90-100	70-95	45-65	30-40	10-20
	26-33	Cemented-----	---	---	---	---	---	---	---	---	---
	33-60	Fine sandy loam, sandy loam, loamy sand.	SM	A-2	0	90-100	85-95	50-65	15-30	---	NP
Allor-----	0-12	Gravelly loam----	SM-SC	A-2, A-4	5-10	70-80	55-75	45-65	30-45	20-30	5-10
	12-34	Gravelly clay loam, gravelly sandy clay loam.	SC	A-6, A-7	0-10	70-85	55-75	45-65	35-50	35-45	15-20
	34-60	Gravelly loamy sand, very gravelly loamy sand.	SM	A-1	0-10	55-75	45-65	30-50	10-20	---	NP
3312*: Spasprey-----	0-5	Gravelly fine sandy loam.	SM, SM-SC	A-1, A-2	0-5	70-90	55-70	45-60	20-35	15-25	NP-10
	5-26	Loam, clay loam, sandy clay loam.	CL, SC	A-6	0-5	95-100	90-100	70-95	45-65	30-40	10-20
	26-33	Cemented-----	---	---	---	---	---	---	---	---	---
	33-60	Fine sandy loam, sandy loam, loamy sand.	SM	A-2	0	90-100	85-95	50-65	15-30	---	NP
Buffaran-----	0-5	Gravelly loam----	GC, SC	A-6	0-5	65-80	55-70	45-60	35-50	25-35	10-15
	5-16	Gravelly clay, gravelly clay loam, clay.	CL, CH	A-7	0-5	75-90	70-85	65-80	50-65	40-55	20-30
	16-27	Indurated-----	---	---	---	---	---	---	---	---	---
	27-60	Cemented-----	---	---	---	---	---	---	---	---	---
Orovada-----	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-65	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3314*: Spasprey-----	0-5	Gravelly fine sandy loam.	SM, SM-SC	A-1, A-2	0-5	70-90	55-70	45-60	20-35	15-25	NP-10
	5-26	Loam, clay loam, sandy clay loam.	CL, SC	A-6	0-5	95-100	90-100	70-95	45-65	30-40	10-20
	26-33	Cemented-----	---	---	---	---	---	---	---	---	---
	33-60	Fine sandy loam, sandy loam, loamy sand.	SM	A-2	0	90-100	85-95	50-65	15-30	---	NP
Allor-----	0-12	Gravelly loam----	SM-SC	A-2, A-4	5-10	70-80	55-75	45-65	30-45	20-30	5-10
	12-34	Gravelly clay loam, gravelly sandy clay loam.	SC	A-6, A-7	0-10	70-85	55-75	45-65	35-50	35-45	15-20
	34-60	Gravelly loamy sand, very gravelly loamy sand.	SM	A-1	0-10	55-75	45-65	30-50	10-20	---	NP
Orovada-----	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
3341*: Halacan-----	0-5	Very gravelly loam.	GM	A-2, A-4	5-15	45-55	35-50	30-45	25-40	30-40	NP-5
	5-17	Extremely channery loam, very channery loam.	GM	A-2, A-4, A-1	40-55	30-55	20-50	15-45	10-40	30-40	NP-5
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Hatur-----	0-14	Gravelly loam----	SM	A-2, A-4	0-5	65-80	55-70	45-60	25-45	20-25	NP-5
	14-29	Extremely gravelly loam, extremely gravelly sandy loam.	GM, GP-GM	A-1	0-25	20-30	15-25	10-25	5-20	20-25	NP-5
	29-33	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
3342*: Halacan-----	0-5	Very gravelly loam.	GM	A-2, A-4	5-15	45-55	35-50	30-45	25-40	30-40	NP-5
	5-17	Extremely channery loam, very channery loam.	GM	A-2, A-4, A-1	40-55	30-55	20-50	15-45	10-40	30-40	NP-5
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3342*: Hapgood-----	0-17	Gravelly loam----	SM-SC	A-4	5-10	70-80	60-75	55-70	35-50	25-30	5-10
	17-40	Very gravelly loam.	GC, GM-GC	A-2	5-25	50-60	35-50	30-40	20-35	25-35	5-15
	40-60	Very cobbly loam, very gravelly loam.	GC, GM-GC	A-2	15-40	55-65	50-60	35-45	25-35	25-35	5-15
Granzan-----	0-12	Very cobbly loam	SM-SC, SC, GM-GC, GC	A-4, A-6	30-50	65-80	50-70	45-60	35-50	25-35	5-15
	12-43	Very gravelly loam, very gravelly silt loam.	GM-GC, GC	A-2, A-4, A-6	0-25	40-65	30-60	25-45	20-40	25-35	5-15
	43-47	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3411*: Zoesta-----	0-7	Cobbly loam-----	CL-ML, ML	A-4	25-40	80-90	75-90	65-80	50-65	20-30	NP-10
	7-23	Clay-----	CL, CH	A-7	0-10	90-100	85-95	75-90	65-80	45-60	20-30
	23-31	Gravelly clay loam, gravelly clay.	GC, CL	A-6, A-7	0	60-75	55-70	50-65	40-55	35-50	15-25
	31-60	Very gravelly clay loam, very gravelly loam.	GC	A-2	0	45-55	30-45	25-40	20-35	30-40	10-15
Robson-----	0-2	Very cobbly loam	GM-GC, GC, SM-SC, SC	A-2	30-50	55-75	50-65	30-50	25-35	25-35	5-15
	2-5	Very cobbly clay loam.	GC	A-7	30-45	55-75	50-60	40-60	35-50	40-45	15-20
	5-15	Very cobbly clay, extremely cobbly clay.	GC, GM	A-7	50-80	60-70	50-65	40-55	35-50	45-55	20-25
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Softscrabble----	0-16	Very cobbly loam	GM-GC, SM-SC	A-4	40-50	65-80	60-75	50-65	35-50	20-30	5-10
	16-30	Very cobbly clay loam.	GC	A-6, A-7	30-45	60-75	50-65	45-60	35-50	35-45	15-20
	30-60	Very gravelly clay loam.	GC	A-2, A-6, A-7	0-5	45-60	35-50	30-45	25-40	35-45	15-20
3415*: Zoesta-----	0-7	Cobbly loam-----	CL-ML, ML	A-4	25-40	80-90	75-90	65-80	50-65	20-30	NP-10
	7-23	Clay-----	CL, CH	A-7	0-10	90-100	85-95	75-90	65-80	45-60	20-30
	23-31	Gravelly clay loam, gravelly clay.	GC, CL	A-6, A-7	0	60-75	55-70	50-65	40-55	35-50	15-25
	31-60	Very gravelly clay loam, very gravelly loam.	GC	A-2	0	45-55	30-45	25-40	20-35	30-40	10-15
Handy-----	0-4	Gravelly loam----	SM-SC, GM-GC, SC, GC	A-4, A-6	10-25	65-80	55-70	45-60	35-50	25-35	5-15
	4-30	Gravelly clay, clay.	CL, CH	A-7	0-5	80-100	70-90	65-80	55-70	45-55	20-30
	30-60	Gravelly loam----	SM-SC, GM-GC	A-4	0-10	65-80	55-70	50-65	35-50	20-30	5-10

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3417*: Zoesta-----	0-7	Cobbly loam-----	CL-ML, ML	A-4	25-40	80-90	75-90	65-80	50-65	20-30	NP-10
	7-23	Clay-----	CL, CH	A-7	0-10	90-100	85-95	75-90	65-80	45-60	20-30
	23-31	Gravelly clay loam, gravelly clay.	GC, CL	A-6, A-7	0	60-75	55-70	50-65	40-55	35-50	15-25
	31-60	Very gravelly clay loam, very gravelly loam.	GC	A-2	0	45-55	30-45	25-40	20-35	30-40	10-15
Roca-----	0-4	Very cobbly loam	CL	A-6	50-60	85-100	75-85	70-80	50-60	25-35	10-15
	4-24	Very gravelly clay loam, very gravelly clay.	GC, SC	A-2	0-10	60-75	30-50	25-45	20-35	45-60	20-30
	24	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Softscrabble----	0-16	Gravelly loam----	SM-SC	A-4	0-5	70-85	55-70	45-60	35-50	20-30	5-10
	16-30	Very cobbly clay loam.	GC	A-6, A-7	30-45	60-75	50-65	45-60	35-50	35-45	15-20
	30-60	Gravelly clay loam.	GC, CL	A-6, A-7	5-10	65-80	55-70	50-65	40-55	35-45	15-20
3421*: Belate-----	0-14	Very gravelly loam.	GM-GC	A-2	5-15	50-65	35-50	30-40	25-35	20-25	5-10
	14-60	Very gravelly clay loam, very gravelly loam.	GC	A-2, A-6	5-10	50-65	35-50	35-45	30-40	25-35	10-15
Softscrabble----	0-16	Gravelly loam----	SM-SC	A-4	0-5	70-85	55-70	45-60	35-50	20-30	5-10
	16-30	Very cobbly clay loam.	GC	A-6, A-7	30-45	60-75	50-65	45-60	35-50	35-45	15-20
	30-60	Gravelly clay loam.	GC, CL	A-6, A-7	5-10	65-80	55-70	50-65	40-55	35-45	15-20
Torro-----	0-10	Gravelly loam----	SM	A-4	15-25	70-80	55-70	45-60	35-50	20-25	NP-5
	10-34	Extremely gravelly clay loam, extremely gravelly loam.	GC	A-2	10-25	30-50	15-30	15-25	10-20	25-35	10-15
	34-60	Very gravelly coarse sandy loam, very gravelly sandy loam.	GM, SM	A-1	5-15	50-65	35-50	15-35	10-20	---	NP
3422*: Belate-----	0-12	Gravelly loam----	SM-SC, CL-ML	A-4	5-10	75-85	60-75	55-70	45-60	20-25	5-10
	12-60	Very gravelly clay loam, very gravelly loam.	GC	A-2, A-6	5-10	50-65	35-50	35-45	30-40	25-35	10-15
Robson-----	0-2	Gravelly loam----	SM-SC, SC, CL-ML, CL	A-4, A-6	5-15	70-85	60-75	50-65	40-55	25-35	5-15
	2-15	Very cobbly clay, extremely cobbly clay.	GC, GM	A-7	50-80	60-70	50-65	40-55	35-50	45-55	20-25
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3422*: Torro-----	0-10	Gravelly loam----	SM	A-4	5-10	70-85	60-75	50-65	35-50	20-25	NP-5
	10-38	Extremely gravelly loam, extremely gravelly clay loam, extremely gravelly sandy clay loam.	GM-GC, GC, GP-GC	A-2	0	20-35	15-25	10-20	5-15	25-35	5-15
	38-60	Extremely gravelly sandy loam, extremely gravelly loamy coarse sand.	GP-GM	A-1	5-15	30-40	20-30	10-20	5-10	---	NP
3423*: Belate-----	0-14	Very gravelly loam.	GM-GC	A-2	5-15	50-65	35-50	30-40	25-35	20-25	5-10
	14-60	Very gravelly clay loam, very gravelly loam.	GC	A-2, A-6	5-10	50-65	35-50	35-45	30-40	25-35	10-15
Cleavage-----	0-4	Extremely gravelly loam.	GM-GC	A-2	0-10	35-45	15-25	10-25	10-20	25-30	5-10
	4-15	Very cobbly clay loam, extremely gravelly clay loam, very gravelly loam.	GC	A-2	0-45	40-55	30-45	25-45	20-35	30-45	10-20
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Softscrabble----	0-16	Gravelly loam----	SM-SC	A-4	0-5	70-85	55-70	45-60	35-50	20-30	5-10
	16-30	Very cobbly clay loam.	GC	A-6, A-7	30-45	60-75	50-65	45-60	35-50	35-45	15-20
	30-60	Gravelly clay loam.	GC, CL	A-6, A-7	5-10	65-80	55-70	50-65	40-55	35-45	15-20
3450*: Reluctan-----	0-9	Very cobbly loam	GM-GC	A-2, A-4	30-50	55-65	45-60	40-55	30-45	25-30	5-10
	9-27	Gravelly loam, gravelly clay loam.	GC, CL	A-6, A-7	0-15	65-85	60-75	55-75	40-60	35-45	15-20
	27	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Robson-----	0-2	Very gravelly loam.	GM-GC, GC	A-2	5-15	40-50	30-40	20-35	15-30	25-35	5-15
	2-15	Very cobbly clay, extremely cobbly clay.	GC, GM	A-7	50-80	60-70	50-65	40-55	35-50	45-55	20-25
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3450*: Cleavage-----	0-4	Extremely gravelly loam.	GM-GC	A-2	0-10	35-45	15-25	10-25	10-20	25-30	5-10
	4-18	Very cobbly clay loam, extremely gravelly clay loam, very gravelly loam.	GC	A-2	0-45	40-55	30-45	25-45	20-35	30-45	10-20
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3453*: Reluctan-----	0-9	Very gravelly loam.	GM-GC	A-2, A-4	10-25	35-65	30-55	25-55	20-40	25-30	5-10
	9-27	Gravelly clay loam, gravelly loam.	GC, CL	A-6, A-7	0-15	65-85	60-75	55-75	40-60	35-45	15-20
	27	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Locane-----	0-6	Extremely gravelly sandy loam.	GM-GC, GP-GC	A-2	5-20	40-55	15-25	10-20	5-15	20-30	5-10
	6-14	Very gravelly clay loam.	GC	A-2, A-7, A-6	0-10	50-65	35-50	30-45	25-40	35-45	15-20
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Itca-----	0-9	Very cobbly loam	GM-GC, GC	A-4, A-6	30-50	60-75	50-65	45-60	35-50	25-35	5-15
	9-17	Very cobbly clay loam, very gravelly clay, extremely gravelly clay.	CL, GC	A-7, A-2	0-55	40-80	30-75	25-70	20-60	40-50	15-25
	17-21	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3455*: Reluctan-----	0-9	Very cobbly loam	GM-GC	A-2, A-4	30-50	55-65	45-60	40-55	30-45	25-30	5-10
	9-27	Gravelly loam, gravelly clay loam.	GC, CL	A-6, A-7	0-15	65-85	60-75	55-75	40-60	35-45	15-20
	27	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Roca-----	0-5	Very cobbly loam	CL	A-6	50-60	85-100	75-85	70-80	50-60	25-35	10-15
	5-27	Very gravelly clay loam, very gravelly clay.	GC, SC	A-2	0-10	60-75	30-50	25-45	20-35	45-60	20-30
	27-31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Colbar-----	0-3	Cobbly loam-----	CL-ML	A-4	35-45	90-100	85-95	75-85	50-60	20-30	5-10
	3-22	Cobbly loam, gravelly clay loam, cobbly clay loam.	CL	A-6	10-35	90-95	70-85	60-80	50-65	30-40	10-20
	22-26	Gravelly loam, cobbly loam.	SM-SC, CL-ML	A-4	5-30	75-95	60-90	55-75	35-55	20-30	5-10
	26-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3457*: Reluctan-----	0-9	Very cobbly loam	GM-GC	A-2, A-4	30-50	55-65	45-60	40-55	30-45	25-30	5-10
	9-27	Gravelly loam, gravelly clay loam.	GC, CL	A-6, A-7	0-15	65-85	60-75	55-75	40-60	35-45	15-20
	27	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Clan Alpine-----	0-10	Very gravelly loam.	GM-GC	A-2, A-4	15-25	60-70	50-60	35-45	30-40	25-30	5-10
	10-39	Very cobbly loam, very cobbly clay loam, very gravelly clay loam.	GC	A-2, A-6	15-35	50-70	35-60	25-50	20-40	30-40	10-20
	39	Weathered bedrock	---	---	---	---	---	---	---	---	---
Roca-----	0-4	Very cobbly loam	CL	A-6	50-60	85-100	75-85	70-80	50-60	25-35	10-15
	4-24	Very gravelly clay loam, very gravelly clay.	GC, SC	A-2	0-10	60-75	30-50	25-45	20-35	45-60	20-30
	24	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3461*: Torro-----	0-10	Very gravelly loam.	GM	A-1, A-2	0	45-55	35-50	30-40	20-35	20-25	NP-5
	10-34	Extremely gravelly loam, extremely gravelly clay loam, extremely gravelly sandy clay loam.	GM-GC, GC, GP-GC	A-2	0	20-35	15-25	10-20	5-15	25-35	5-15
	34-60	Extremely gravelly sandy loam, extremely gravelly loamy coarse sand.	GP-GM	A-1	5-15	30-40	20-30	10-20	5-10	---	NP
Rubble land.											
Cleavage-----	0-4	Extremely gravelly loam.	GM-GC	A-2	0-10	35-45	15-25	10-25	10-20	25-30	5-10
	4-15	Very cobbly clay loam, extremely gravelly clay loam, very gravelly loam.	GC	A-2	0-45	40-55	30-45	25-45	20-35	30-45	10-20
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.



TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3462*: Torro-----	0-10	Extremely gravelly loam.	GM	A-1	5-10	45-60	20-30	15-25	10-20	20-25	NP-5
	10-34	Extremely gravelly loam, extremely gravelly clay loam, extremely gravelly sandy clay loam.	GM-GC, GC, GP-GC	A-2	0	20-35	15-25	10-20	5-15	25-35	5-15
	34-60	Extremely gravelly sandy loam, extremely gravelly loamy coarse sand.	GP-GM	A-1	5-15	30-40	20-30	10-20	5-10	---	NP
Reluctan-----	0-9	Very cobbly loam	GM-GC	A-2, A-4	30-50	55-65	45-60	40-55	30-45	25-30	5-10
	9-27	Gravelly loam, gravelly clay loam.	GC, CL	A-6, A-7	0-15	65-85	60-75	55-75	40-60	35-45	15-20
	27	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Cleavage-----	0-4	Extremely gravelly loam.	GM-GC	A-2	0-10	35-45	15-25	10-25	10-20	25-30	5-10
	4-15	Very cobbly clay loam, extremely gravelly clay loam, very gravelly loam.	GC	A-2	0-45	40-55	30-45	25-45	20-35	30-45	10-20
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3463*: Torro-----	0-10	Extremely gravelly loam.	GM	A-1	5-10	45-60	20-30	15-25	10-20	20-25	NP-5
	10-34	Extremely gravelly loam, extremely gravelly clay loam, extremely gravelly sandy clay loam.	GM-GC, GC, GP-GC	A-2	0	20-35	15-25	10-20	5-15	25-35	5-15
	34-60	Extremely gravelly sandy loam, extremely gravelly loamy coarse sand.	GP-GM	A-1	5-15	30-40	20-30	10-20	5-10	---	NP
Clan Alpine-----	0-10	Very cobbly loam	GM-GC, SM-SC	A-4	25-40	65-75	55-70	45-60	35-50	20-25	5-10
	10-39	Very cobbly loam, very cobbly clay loam, very gravelly clay loam.	GC	A-2, A-6	15-35	50-70	35-60	25-50	20-40	30-40	10-20
	39	Weathered bedrock	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3463*: Itca-----	0-2	Very cobbly loam	GM-GC, GC	A-4, A-6	30-50	60-75	50-65	45-60	35-50	25-35	5-15
	2-14	Very cobbly clay loam, very gravelly clay, extremely gravelly clay.	CL, GC	A-7, A-2	0-55	40-80	30-75	25-70	20-60	40-50	15-25
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3464*: Torro-----	0-10	Extremely gravelly loam.	GM	A-1	5-10	45-60	20-30	15-25	10-20	20-25	NP-5
	10-34	Extremely gravelly loam, extremely gravelly clay loam, extremely gravelly sandy clay loam.	GM-GC, GC, GP-GC	A-2	0	20-35	15-25	10-20	5-15	25-35	5-15
	34-60	Extremely gravelly sandy loam, extremely gravelly loamy coarse sand.	GP-GM	A-1	5-15	30-40	20-30	10-20	5-10	---	NP
Itca-----	0-2	Very cobbly loam	GM-GC, GC	A-4, A-6	30-50	60-75	50-65	45-60	35-50	25-35	5-15
	2-14	Very cobbly clay loam, very gravelly clay, extremely gravelly clay.	CL, GC	A-7, A-2	0-55	40-80	30-75	25-70	20-60	40-50	15-25
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Softscrabble----	0-16	Gravelly loam----	SM-SC	A-4	0-5	70-85	55-70	45-60	35-50	20-30	5-10
	16-30	Very cobbly clay loam.	GC	A-6, A-7	30-45	60-75	50-65	45-60	35-50	35-45	15-20
	30-60	Gravelly clay loam.	GC, CL	A-6, A-7	5-10	65-80	55-70	50-65	40-55	35-45	15-20
3465*: Torro-----	0-10	Extremely gravelly loam.	GM	A-1	5-10	45-60	20-30	15-25	10-20	20-25	NP-5
	10-34	Extremely gravelly loam, extremely gravelly clay loam, extremely gravelly sandy clay loam.	GM-GC, GC, GP-GC	A-2	0	20-35	15-25	10-20	5-15	25-35	5-15
	34-60	Extremely gravelly sandy loam, extremely gravelly loamy coarse sand.	GP-GM	A-1	5-15	30-40	20-30	10-20	5-10	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct						
3465*: Clan Alpine-----	0-10	Extremely cobbly loam.	GM-GC	A-2	45-55	35-45	25-35	20-30	15-25	20-25	5-10
	10-39	Very cobbly loam, very cobbly clay loam, very gravelly clay loam.	GC	A-2, A-6	15-35	50-70	35-60	25-50	20-40	30-40	10-20
	39	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Softscrabble----	0-16	Loam-----	SM-SC, CL-ML	A-4	0-5	85-100	80-90	65-80	40-65	20-30	5-10
	16-30	Very cobbly clay loam.	GC	A-6, A-7	30-45	60-75	50-65	45-60	35-50	35-45	15-20
	30-60	Very gravelly clay loam.	GC	A-2, A-6, A-7	0-5	45-60	35-50	30-45	25-40	35-45	15-20
3562*: Locane-----	0-6	Gravelly loam----	SM-SC	A-4, A-2	0-5	70-85	55-70	45-60	30-50	20-30	5-10
	6-14	Very gravelly clay loam.	GC	A-2, A-7, A-6	0-10	50-65	35-50	30-45	25-40	35-45	15-20
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Coztur-----	0-11	Gravelly loam----	GM-GC, SM-SC	A-2, A-4	0-10	60-80	55-75	50-70	30-50	20-25	5-10
	11-17	Loam, clay loam	CL	A-6	0	90-100	85-95	70-85	50-65	30-40	10-15
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Punchbowl-----	0-3	Gravelly loam----	SM	A-2, A-4	5-10	65-85	60-75	45-60	30-45	15-25	NP-5
	3-7	Loam, gravelly loam.	SC, GC, CL	A-6	0-5	70-100	65-95	60-85	45-55	25-35	10-15
	7-11	Gravelly clay loam, gravelly sandy clay loam.	GC	A-6, A-7	0-5	55-65	50-60	45-55	35-45	35-45	15-20
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3563*: Locane-----	0-6	Gravelly sandy loam.	SM-SC	A-4, A-2	0-5	70-85	55-70	45-60	30-50	20-30	5-10
	6-14	Very gravelly clay loam.	GC	A-2, A-7, A-6	0-10	50-65	35-50	30-45	25-40	35-45	15-20
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Muni-----	0-3	Gravelly sandy loam.	SM-SC	A-2	0	80-90	60-75	50-65	25-35	20-25	5-10
	3-18	Sandy clay loam, clay loam, loam.	CL	A-6	0	90-100	85-95	70-80	50-60	30-40	10-20
	18-49	Cemented-----	---	---	---	---	---	---	---	---	---
	49-60	Very gravelly loamy sand.	GM, SM	A-1	0-10	50-65	35-55	20-30	10-20	---	NP
Locane, eroded--	0-2	Very gravelly loam.	GM-GC	A-2	5-15	50-65	30-45	25-40	15-30	20-30	5-10
	2-10	Very gravelly clay loam.	GC	A-2, A-7, A-6	0-10	50-65	35-50	30-45	25-40	35-45	15-20
	10-14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3625*: Minat-----	0-9	Very gravelly fine sandy loam.	GM-GC	A-2	5-10	45-60	35-50	30-45	10-25	20-30	5-10
	9-27	Very gravelly loam.	GC, GM-GC	A-2	0-10	45-60	30-50	25-45	20-35	25-35	5-15
	27-60	Very gravelly loam, very gravelly fine sandy loam.	GM-GC, GC	A-2	0-10	45-60	30-50	20-45	15-30	25-35	5-15
Coztur-----	0-11	Extremely gravelly loam.	GM-GC	A-2	5-10	20-35	15-25	10-25	10-20	20-25	5-10
	11-17	Loam, clay loam	CL	A-6	0	90-100	85-95	70-85	50-65	30-40	10-15
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Belate-----	0-12	Very cobbly loam	GM-GC	A-4	30-40	65-75	50-65	45-60	35-50	20-25	5-10
	12-60	Very gravelly clay loam, very gravelly loam.	GC	A-2, A-6	5-10	50-65	35-50	35-45	30-40	25-35	10-15
3690*: Izod-----	0-4	Cobbly loam-----	SM-SC, SM, CL-ML, ML	A-4	15-30	80-95	70-90	55-75	45-65	25-35	5-10
	4-10	Very gravelly loam, extremely gravelly loam.	GM-GC, GM	A-2	0-25	20-55	15-50	15-45	10-35	25-35	5-10
	10-14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Koynik-----	0-6	Extremely gravelly sandy loam.	GM-GC, GM	A-2, A-1	10-25	35-50	20-35	15-30	10-25	20-30	NP-10
	6-8	Very gravelly loam, very gravelly very fine sandy loam, very gravelly silt loam.	GM-GC, SM-SC, GC, SC	A-2	0-5	55-70	35-50	30-45	15-30	25-35	5-15
	8	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
3740----- Kelk	0-3	Silt loam-----	CL-ML, ML	A-4	0	100	100	95-100	85-95	25-35	5-10
	3-18	Silt loam-----	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
	18-42	Silt loam-----	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
	42-60	Silt loam-----	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
3741*: Kelk-----	0-14	Very fine sandy loam.	CL-ML	A-4	0	100	100	90-95	65-75	25-30	5-10
	14-51	Silt loam-----	CL-ML, CL	A-4, A-6	0	95-100	95-100	95-100	85-95	25-35	5-15
	51-60	Silt loam-----	CL-ML, CL	A-4, A-6	0	95-100	90-100	90-100	80-95	25-35	5-15

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3741*: Settlemyer-----	0-16	Fine sandy loam	SM	A-2	0	90-100	80-95	70-85	20-35	20-25	NP-5
	16-36	Silty clay loam, clay loam.	CL	A-6	0	100	100	80-100	75-85	35-40	15-20
	36-60	Stratified very gravelly loamy sand to silty clay loam.	GC, CL, GM-GC, CL-ML	A-4, A-6	0-5	60-90	60-85	45-80	35-60	15-25	5-15
3742*: Kelk-----	0-14	Very fine sandy loam.	CL-ML	A-4	0	100	100	90-95	65-75	25-30	5-10
	14-51	Silt loam-----	CL-ML, CL	A-4, A-6	0	95-100	95-100	95-100	85-95	25-35	5-15
	51-60	Silt loam-----	CL-ML, CL	A-4, A-6	0	95-100	90-100	90-100	80-95	25-35	5-15
Ocala-----	0-4	Silt loam-----	ML, CL	A-4, A-6	0	100	100	95-100	85-95	30-40	5-15
	4-36	Silt loam, silty clay loam.	ML, CL	A-6, A-7	0	100	100	95-100	85-95	30-50	10-20
	36-60	Silt loam, silty clay loam.	ML, CL	A-6, A-7	0	90-100	90-100	90-95	85-90	30-50	10-20
3840*: Jung, moderately steep-----	0-8	Very cobbly loam	GM-GC, SM-SC	A-4	35-50	65-80	50-65	45-60	35-50	25-30	5-10
	8-19	Very cobbly clay loam, very cobbly clay, very gravelly clay loam.	GC	A-7	15-40	55-65	50-60	40-50	35-45	40-55	20-30
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Newpass-----	0-4	Very gravelly fine sandy loam.	GM, GM-GC	A-1, A-2	5-10	40-55	30-45	25-40	10-20	15-25	NP-10
	4-14	Clay-----	CH	A-7	0-5	85-100	80-95	75-90	70-85	50-65	25-35
	14-24	Very cobbly silty clay, very gravelly clay, gravelly clay.	CH	A-7	15-50	70-85	55-75	50-70	50-65	50-65	25-35
	24-26	Cemented-----	---	---	---	---	---	---	---	---	---
	26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Jung, strongly sloping-----	0-8	Very cobbly fine sandy loam.	SM-SC	A-2	35-50	65-80	50-65	40-60	20-35	25-30	5-10
	8-19	Very cobbly clay loam, very cobbly clay, very gravelly clay loam.	GC	A-7	15-40	55-65	50-60	40-50	35-45	40-55	20-30
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3841*: Jung-----	0-8	Very cobbly loam	GM-GC, SM-SC	A-4	35-50	65-80	50-65	45-60	35-50	25-30	5-10
	8-19	Very cobbly clay loam, very cobbly clay, very gravelly clay loam.	GC	A-7	15-40	55-65	50-60	40-50	35-45	40-55	20-30
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Itca-----	0-9	Very cobbly loam	GM-GC, GC	A-4, A-6	30-50	60-75	50-65	45-60	35-50	25-35	5-15
	9-17	Very cobbly clay loam, very gravelly clay, extremely gravelly clay.	CL, GC	A-7, A-2	0-55	40-80	30-75	25-70	20-60	40-50	15-25
	17-21	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Roca-----	0-5	Very cobbly loam	CL	A-6	50-60	85-100	75-85	70-80	50-60	25-35	10-15
	5-27	Very gravelly clay loam, very gravelly clay.	GC, SC	A-2	0-10	60-75	30-50	25-45	20-35	45-60	20-30
	27-31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3842*: Jung-----	0-8	Very gravelly loam.	GM	A-1, A-2	0-10	50-60	35-50	25-45	20-35	20-25	NP-5
	8-19	Very cobbly clay loam, very cobbly clay, very gravelly clay loam.	GC	A-7	15-40	55-65	50-60	40-50	35-45	40-55	20-30
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Hooplite-----	0-4	Very gravelly loam.	GM-GC	A-2	0-10	45-60	35-50	30-45	20-35	20-30	5-10
	4-8	Very gravelly loam, very gravelly clay loam.	GC	A-2, A-6	0-15	45-60	35-50	30-45	25-40	30-40	10-15
	8	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3843*: Jung-----	0-8	Very cobbly loam	GM-GC, SM-SC	A-4	35-50	65-80	50-65	45-60	35-50	25-30	5-10
	8-19	Very cobbly clay loam, very cobbly clay, very gravelly clay loam.	GC	A-7	15-40	55-65	50-60	40-50	35-45	40-55	20-30
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3843*: Newpass-----	0-4	Very gravelly fine sandy loam.	GM, GM-GC	A-1, A-2	5-10	40-55	30-45	25-40	10-20	15-25	NP-10
	4-14	Clay-----	CH	A-7	0-5	85-100	80-95	75-90	70-85	50-65	25-35
	14-24	Very cobbly silty clay, very gravelly clay, gravelly clay.	CH	A-7	15-50	70-85	55-75	50-70	50-65	50-65	25-35
	24-26	Cemented-----	---	---	---	---	---	---	---	---	---
	26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Teguro-----	0-6	Very gravelly loam.	GM	A-1, A-2, A-4	10-35	30-55	25-50	20-45	15-40	15-25	NP-5
	6-16	Gravelly clay loam, gravelly loam.	SC	A-2, A-6	0-10	65-80	50-75	35-60	30-50	30-40	15-20
	16-20	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3845*: Jung-----	0-8	Very gravelly loam.	GM	A-1, A-2	0-10	50-60	35-50	25-45	20-35	20-25	NP-5
	8-19	Very cobbly clay loam, very cobbly clay, very gravelly clay loam.	GC	A-7	15-40	55-65	50-60	40-50	35-45	40-55	20-30
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Stingdorn-----	0-7	Extremely cobbly loam.	GM, GM-GC	A-1, A-2	50-60	45-60	35-50	30-45	15-30	15-25	NP-10
	7-15	Very cobbly clay loam.	GC	A-6	30-50	60-75	50-65	45-60	35-50	35-40	15-20
	15-20	Indurated-----	---	---	---	---	---	---	---	---	---
	20	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Atlow-----	0-3	Very gravelly loam.	GC, SC	A-2, A-6	0-15	35-85	30-50	20-45	15-40	25-35	10-15
	3-14	Very gravelly clay loam, very cobbly clay loam.	GC	A-2, A-6, A-7	0-45	35-60	25-50	20-50	15-40	35-45	15-20
	14-18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3846*: Jung-----	0-8	Very cobbly loam	GM-GC, SM-SC	A-4	35-50	65-80	50-65	45-60	35-50	25-30	5-10
	8-19	Very cobbly clay loam, very cobbly clay, very gravelly clay loam.	GC	A-7	15-40	55-65	50-60	40-50	35-45	40-55	20-30
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3846*: Atlow-----	0-6	Very gravelly loam.	GC, SC	A-2, A-6	0-15	35-85	30-50	20-45	15-40	25-35	10-15
	6-15	Very gravelly clay loam, very cobbly clay loam.	GC	A-2, A-6, A-7	0-45	35-60	25-50	20-50	15-40	35-45	15-20
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
McVegas-----	0-5	Very gravelly loam.	GM	A-2, A-4	5-15	50-65	35-50	30-45	25-40	20-30	NP-5
	5-19	Very cobbly clay, very cobbly clay loam.	CL, CH	A-7	30-40	75-90	65-75	50-70	45-60	40-55	20-30
	19-22	Cemented-----	---	---	---	---	---	---	---	---	---
3847*: Jung-----	0-8	Very gravelly loam.	GM	A-1, A-2	0-10	50-60	35-50	25-45	20-35	20-25	NP-5
	8-19	Very cobbly clay loam, very cobbly clay, very gravelly clay loam.	GC	A-7	15-40	55-65	50-60	40-50	35-45	40-55	20-30
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Old Camp-----	0-2	Very cobbly loam	GM, GM-GC, SM, SM-SC	A-2, A-4	25-55	60-70	55-65	45-55	30-40	15-25	NP-10
	2-14	Very cobbly clay loam, extremely stony sandy clay loam, very stony clay loam.	GC	A-2, A-6	35-50	40-55	35-50	30-45	25-40	30-40	15-25
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Clan Alpine-----	0-10	Very gravelly loam.	GM-GC	A-2, A-4	15-25	60-70	50-60	35-45	30-40	25-30	5-10
	10-39	Very cobbly loam, very cobbly clay loam, very gravelly clay loam.	GC	A-2, A-6	15-35	50-70	35-60	25-50	20-40	30-40	10-20
	39	Weathered bedrock	---	---	---	---	---	---	---	---	---

See footnote at end of table.



TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3848*: Jung-----	0-8	Very gravelly loam.	GM	A-1, A-2	0-10	50-60	35-50	25-45	20-35	20-25	NP-5
	8-19	Very cobbly clay loam, very cobbly clay, very gravelly clay loam.	GC	A-7	15-40	55-65	50-60	40-50	35-45	40-55	20-30
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
McVegas-----	0-5	Very gravelly loam.	GM	A-2, A-4	5-15	50-65	35-50	30-45	25-40	20-30	NP-5
	5-19	Very cobbly clay, very cobbly clay loam.	CL, CH	A-7	30-40	75-90	65-75	50-70	45-60	40-55	20-30
	19-22	Cemented-----	---	---	---	---	---	---	---	---	---
	22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Enko-----	0-6	Gravelly fine sandy loam.	SM-SC	A-2	0	60-80	50-75	40-65	15-30	20-25	5-10
	6-18	Loam, sandy loam	SM-SC, CL-ML	A-4	0	95-100	85-100	60-90	35-70	20-30	5-10
	18-60	Loam, fine sandy loam, sandy loam.	SM-SC, CL-ML	A-2, A-4	0	95-100	75-100	60-90	30-65	20-25	5-10
3851*: Decram, moderately steep-----	0-11	Extremely gravelly loam.	GC	A-2	10-25	35-50	20-35	15-30	10-20	25-35	10-15
	11-28	Very gravelly loam, very cobbly loam, extremely gravelly loam.	GC	A-2, A-6	15-55	40-65	35-60	25-55	20-50	25-35	10-15
	28	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Decram, steep---	0-11	Very gravelly loam.	GC	A-2	5-15	40-55	30-45	25-40	20-35	25-35	10-15
	11-28	Very gravelly loam, very cobbly loam, extremely gravelly loam.	GC	A-2, A-6	15-55	40-65	35-60	25-55	20-50	25-35	10-15
	28	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Hapgood-----	0-17	Gravelly loam----	SM-SC	A-4	5-10	70-80	60-75	55-70	35-50	25-30	5-10
	17-40	Very gravelly loam.	GC, GM-GC	A-2	5-25	50-60	35-50	30-40	20-35	25-35	5-15
	40-60	Very cobbly loam, very gravelly loam.	GC, GM-GC	A-2	15-40	55-65	50-60	35-45	25-35	25-35	5-15

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3852*: Decram-----	0-11	Very gravelly loam.	GC	A-2	5-15	40-55	30-45	25-40	20-35	25-35	10-15
	11-28	Very gravelly loam, very cobbly loam, extremely gravelly loam.	GC	A-2, A-6	15-55	40-65	35-60	25-55	20-50	25-35	10-15
	28	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Hapgood-----	0-17	Gravelly loam----	SM-SC	A-4	5-10	70-80	60-75	55-70	35-50	25-30	5-10
	17-40	Very gravelly loam.	GC, GM-GC	A-2	5-25	50-60	35-50	30-40	20-35	25-35	5-15
	40-60	Very cobbly loam, very gravelly loam.	GC, GM-GC	A-2	15-40	55-65	50-60	35-45	25-35	25-35	5-15
Chad-----	0-17	Cobbly loam-----	SM-SC, CL-ML	A-4	15-25	70-80	65-75	40-60	35-55	20-30	5-10
	17-42	Gravelly clay, gravelly clay loam, clay.	CL, MH, SM, SC	A-7	0-5	75-95	55-85	45-75	40-65	40-55	15-25
	42-50	Weathered bedrock	---	---	---	---	---	---	---	---	---
3861*: Duco-----	0-6	Very cobbly loam	SM-SC, GM-GC	A-2, A-4	35-55	55-80	50-75	35-60	25-50	20-30	5-10
	6-15	Very gravelly clay loam, extremely stony clay loam, very cobbly sandy clay loam.	GC	A-2	15-55	35-60	30-55	20-35	15-30	35-40	15-20
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Itca-----	0-9	Very gravelly loam.	GC, GM-GC	A-2	5-10	50-60	35-50	30-40	25-35	25-35	5-15
	9-17	Very gravelly clay, very gravelly clay loam.	GC	A-7, A-2	10-20	50-65	40-50	35-45	25-40	40-50	15-25
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Roca-----	0-4	Very cobbly loam	CL	A-6	50-60	85-100	75-85	70-80	50-60	25-35	10-15
	4-24	Very gravelly clay loam, very gravelly clay.	GC, SC	A-2	0-10	60-75	30-50	25-45	20-35	45-60	20-30
	24	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct						
3863*: Duco-----	0-7	Stony loam-----	SM-SC, GM-GC, CL-ML	A-4	5-10	60-80	55-75	45-65	35-55	20-30	5-10
	7-19	Very gravelly clay loam, extremely stony clay loam, very cobbly sandy clay loam.	GC	A-2	15-55	35-60	30-55	20-35	15-30	35-40	15-20
	19-23	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Clanalpine-----	0-10	Very gravelly loam.	GM-GC	A-2, A-4	15-25	60-70	50-60	35-45	30-40	25-30	5-10
	10-39	Very cobbly loam, very cobbly clay loam, very gravelly clay loam.	GC	A-2, A-6	15-35	50-70	35-60	25-50	20-40	30-40	10-20
	39	Weathered bedrock	---	---	---	---	---	---	---	---	---
Jung-----	0-8	Very gravelly loam.	GM	A-1, A-2	0-10	50-60	35-50	25-45	20-35	20-25	NP-5
	8-19	Very cobbly clay loam, very cobbly clay, very gravelly clay loam.	GC	A-7	15-40	55-65	50-60	40-50	35-45	40-55	20-30
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3881*: Layview-----	0-3	Extremely cobbly loam.	GM-GC	A-4	50-65	60-75	55-65	45-60	35-50	25-30	5-10
	3-12	Very gravelly loam, very gravelly clay loam.	GC	A-2, A-6	10-15	45-55	40-50	35-45	30-40	30-40	15-20
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Packer-----	0-10	Gravelly loam----	SM-SC, GM-GC	A-4	0-10	65-80	55-70	45-60	35-50	20-30	5-10
	10-21	Extremely cobbly clay loam, extremely cobbly loam.	GC	A-2	40-55	40-55	30-45	25-40	15-30	30-40	10-15
	21-60	Extremely cobbly sandy loam, extremely cobbly loam.	GM	A-1	40-55	40-55	30-45	20-35	10-25	20-25	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3881*: Hapgood-----	0-17	Gravelly loam----	SM-SC	A-4	5-10	70-80	60-75	55-70	35-50	25-30	5-10
	17-40	Very gravelly loam.	GC, GM-GC	A-2	5-25	50-60	35-50	30-40	20-35	25-35	5-15
	40-60	Very cobbly loam, very gravelly loam.	GC, GM-GC	A-2	15-40	55-65	50-60	35-45	25-35	25-35	5-15
3891*: Labshaft-----	0-8	Extremely stony loam.	SC, CL	A-2, A-6	50-65	65-80	60-75	40-65	30-55	30-35	10-15
	8-15	Very gravelly loam, very gravelly clay loam, extremely gravelly sandy clay loam.	GC	A-2	15-25	35-60	25-50	20-40	10-30	35-45	15-20
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Hapgood-----	0-17	Gravelly loam----	SM-SC	A-4	5-10	70-80	60-75	55-70	35-50	25-30	5-10
	17-40	Very gravelly loam.	GC, GM-GC	A-2	5-25	50-60	35-50	30-40	20-35	25-35	5-15
	40-60	Very cobbly loam, very gravelly loam.	GC, GM-GC	A-2	15-40	55-65	50-60	35-45	25-35	25-35	5-15
Rock outcrop.											
3950*: Hooplite-----	0-4	Very gravelly loam.	GM-GC	A-2	0-10	45-60	35-50	30-45	20-35	20-30	5-10
	4-8	Very gravelly loam, very gravelly clay loam.	GC	A-2, A-6	0-15	45-60	35-50	30-45	25-40	30-40	10-15
	8	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Jung-----	0-8	Very gravelly loam.	GM	A-1, A-2	0-10	50-60	35-50	25-45	20-35	20-25	NP-5
	8-19	Very cobbly clay loam, very cobbly clay, very gravelly clay loam.	GC	A-7	15-40	55-65	50-60	40-50	35-45	40-55	20-30
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Izod-----	0-4	Very cobbly loam	SM-SC, SM, GM-GC, GM	A-2, A-4	25-40	60-80	40-65	35-55	25-50	25-35	5-10
	4-10	Very gravelly loam, extremely gravelly loam.	GM-GC, GM	A-2	0-25	20-55	15-50	15-45	10-35	25-35	5-10
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3951*: Hooplite-----	0-4	Very gravelly fine sandy loam.	GM-GC, SM-SC	A-2	10-25	55-70	45-50	40-50	20-30	20-30	5-10
	4-8	Very gravelly loam, very gravelly clay loam.	GC	A-2, A-6	0-15	45-60	35-50	30-45	25-40	30-40	10-15
	8	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Old Camp-----	0-2	Very gravelly loam.	GM, GM-GC	A-1, A-2	0-15	50-60	35-45	30-40	20-30	15-25	NP-10
	2-14	Very cobbly clay loam, extremely stony sandy clay loam, very stony clay loam.	GC	A-2, A-6	35-50	40-55	35-50	30-45	25-40	30-40	15-25
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Puett-----	0-3	Fine sandy loam	SM	A-4	0	90-100	85-95	60-80	35-50	---	NP
	3-13	Coarse sandy loam, fine sandy loam, sandy loam.	SM, ML	A-1, A-2, A-4	0	80-100	75-95	40-80	15-55	---	NP
	13	Weathered bedrock	---	---	---	---	---	---	---	---	---
3952*: Hooplite-----	0-4	Very gravelly fine sandy loam.	GM-GC	A-2	0-10	45-60	35-50	30-45	10-20	20-30	5-10
	4-8	Very gravelly loam, very gravelly clay loam.	GC	A-2, A-6	0-15	45-60	35-50	30-45	25-40	30-40	10-15
	8	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Stingdorn-----	0-7	Gravelly loam----	SM-SC	A-2, A-4	5-10	70-85	55-70	40-55	30-40	20-30	5-10
	7-15	Very cobbly clay loam.	GC	A-6	30-50	60-75	50-65	45-60	35-50	35-40	15-20
	15-20	Indurated-----	---	---	---	---	---	---	---	---	---
3960----- Pineval	20	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
	0-5	Gravelly loam----	CL-ML, GM-GC	A-4	0	65-85	60-75	45-65	40-55	20-30	5-10
	5-11	Very gravelly clay loam, very gravelly loam, very gravelly sandy clay loam.	GC	A-2	0	35-60	25-50	20-40	15-35	30-40	10-15
	11-60	Stratified very gravelly sandy loam to extremely gravelly sand.	GP-GM, GM	A-1	0-25	30-60	20-50	15-40	5-20	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct						
3961*: Pineval-----	0-5	Very cobbly loam	SM-SC, GM-GC	A-4	30-40	65-80	55-70	45-60	35-50	20-30	5-10
	5-11	Very gravelly clay loam, very gravelly loam, very gravelly sandy clay loam.	GC	A-2	0-5	35-60	25-50	20-40	15-35	30-40	10-15
	11-60	Stratified very gravelly sandy loam to extremely gravelly sand.	GP-GM, GM	A-1	0	30-60	20-50	15-40	5-20	---	NP
Orovada-----	0-8	Cobbly fine sandy loam.	SM	A-4	25-35	85-95	75-90	60-75	35-50	15-25	NP-5
	8-26	Fine sandy loam, loam.	SM, ML	A-4	0	90-100	80-95	60-80	40-60	20-30	NP-5
	26-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	90-100	80-95	60-85	35-55	20-30	NP-5
Beoska-----	0-13	Very fine sandy loam.	ML, SM	A-4	0	85-95	75-95	70-80	45-65	15-25	NP-5
	13-24	Silt loam, silty clay loam, clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	24-55	Stratified gravelly very fine sandy loam to gravelly sandy loam.	GM, SM	A-1, A-2	0-10	55-80	50-75	30-50	20-35	15-25	NP-5
	55-60	Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.	GM	A-1	0-15	30-55	25-50	15-35	10-25	15-25	NP-5
3964*: Pineval-----	0-5	Gravelly fine sandy loam.	SM-SC	A-2	0	65-85	60-75	50-70	20-35	20-30	5-10
	5-11	Very gravelly clay loam, very gravelly loam, very gravelly sandy clay loam.	GC	A-2	0	35-60	25-50	20-40	15-35	30-40	10-15
	11-60	Stratified very gravelly sandy loam to extremely gravelly sand.	GP-GM, GM	A-1	0-25	30-60	20-50	15-40	5-20	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3964*: Orovada-----	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-65	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
3990----- Settlemeier	0-16	Fine sandy loam	SM	A-2	0	90-100	80-95	70-85	20-35	20-25	NP-5
	16-36	Silty clay loam, clay loam.	CL	A-6	0	100	100	80-100	75-85	35-40	15-20
	36-60	Stratified very gravelly loamy sand to silty clay loam.	GC, CL, GM-GC, CL-ML	A-4, A-6	0-5	60-90	60-85	45-80	35-60	15-25	5-15
3991*: Settlemeier----	0-16	Loam-----	CL-ML, CL	A-4, A-6	0	100	100	80-100	70-80	25-35	5-15
	16-36	Silty clay loam, clay loam.	CL	A-6	0	100	100	80-100	75-85	35-40	15-20
	36-60	Stratified very gravelly loamy sand to silty clay loam.	GC, CL, GM-GC, CL-ML	A-4, A-6	0-5	60-90	60-85	45-80	35-60	15-25	5-15
Pineval-----	0-5	Gravelly loam----	CL-ML, GM-GC	A-4	0	65-85	60-75	45-65	40-55	20-30	5-10
	5-11	Very gravelly clay loam, very gravelly loam, very gravelly sandy clay loam.	GC	A-2	0	35-60	25-50	20-40	15-35	30-40	10-15
	11-60	Stratified very gravelly sandy loam to extremely gravelly sand.	GP-GM, GM	A-1	0-25	30-60	20-50	15-40	5-20	---	NP
3992*: Settlemeier, drained-----	0-16	Loam-----	CL, CL-ML	A-4, A-6	0	100	100	80-95	60-75	25-35	5-15
	16-40	Silt loam, silty clay loam.	CL	A-6, A-7	0	95-100	90-100	85-90	60-85	35-45	15-20
	40-60	Fine sandy loam	CL-ML, SM-SC	A-4	0	95-100	90-100	80-90	40-60	20-30	5-10
Settlemeier, frequently flooded-----	0-15	Loam-----	CL	A-6	0	90-100	90-100	75-90	50-65	25-35	10-15
	15-35	Silty clay loam, clay loam.	CL	A-6	0	100	100	80-100	75-90	35-40	15-20
	35-60	Stratified very gravelly loamy sand to silty clay loam.	GC, CL, GM-GC, CL-ML	A-4, A-6	0-5	60-90	60-85	45-80	35-60	15-25	5-15

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
4041*: Hymas-----	0-9	Gravelly loam----	GC, SC	A-6	5-10	65-80	55-70	50-60	35-50	25-35	10-15
	9-15	Very cobbly loam, extremely gravelly loam, extremely cobbly loam.	GM, GM-GC	A-2, A-1, A-4	30-70	35-65	30-60	25-55	20-45	20-30	NP-10
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Xine-----	0-10	Gravelly loam----	SM	A-2, A-4	0-5	65-80	50-75	45-60	30-45	15-25	NP-5
	10-33	Very cobbly loam, very cobbly sandy loam.	GM, SM	A-2, A-4, A-1	35-50	55-80	50-75	35-60	20-45	15-25	NP-5
	33	Weathered bedrock	---	---	---	---	---	---	---	---	---
Attella-----	0-3	Very gravelly loam.	GM	A-1, A-2	5-15	35-55	30-50	25-40	20-35	25-35	NP-10
	3-7	Very gravelly loam, very gravelly silt loam.	GC, GM-GC	A-2	5-15	35-55	30-50	25-40	20-35	25-40	5-15
	7	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
4070*: Genaw-----	0-6	Gravelly loam----	GM-GC, SM-SC	A-4	0-5	65-80	55-75	45-65	35-50	20-30	5-10
	6-11	Gravelly loam, gravelly clay loam.	GC, SC	A-6	0-5	60-80	55-75	45-65	35-50	25-35	10-15
	11-16	Very gravelly loam.	GM-GC	A-2	0-5	45-55	35-50	25-45	20-35	25-30	5-10
	16	Weathered bedrock	---	---	---	---	---	---	---	---	---
Wieland-----	0-8	Gravelly loam----	GC, CL, SC	A-6	0-5	60-85	50-75	45-70	35-60	25-35	10-15
	8-20	Gravelly clay, clay.	CH, SC	A-7	0-5	75-95	55-90	50-80	45-75	50-60	25-35
	20-60	Loam, gravelly loam, gravelly sandy loam.	CL-ML, SM-SC	A-4, A-2	0-5	65-95	55-90	40-85	25-70	20-30	5-10
Grina-----	0-3	Very gravelly loam.	GM-GC, GC	A-2	0-5	45-60	30-45	25-40	15-30	25-35	5-15
	3-14	Loam, silt loam, silty clay loam.	CL	A-6, A-7	0	90-100	80-100	75-95	60-85	30-45	10-20
	14-18	Weathered bedrock	---	---	---	---	---	---	---	---	---

See footnote at end of table.



TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
4072*: Genaw-----	0-6	Very fine sandy loam.	SM, SM-SC	A-4	0	90-100	85-95	75-90	35-50	15-30	NP-10
	6-11	Gravelly loam, gravelly clay loam.	GC, SC	A-6	0-5	60-80	55-75	45-65	35-50	25-35	10-15
	11-16	Very gravelly loam.	GM-GC	A-2	0-5	45-55	35-50	25-45	20-35	25-30	5-10
	16	Weathered bedrock	---	---	---	---	---	---	---	---	---
Orovada-----	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
Puett-----	0-4	Fine sandy loam	SM	A-4	0	90-100	85-95	60-80	35-50	---	NP
	4-15	Coarse sandy loam, fine sandy loam, sandy loam.	SM, ML	A-1, A-2, A-4	0	80-100	75-95	40-80	15-55	---	NP
	15-19	Weathered bedrock	---	---	---	---	---	---	---	---	---
4073*: Genaw-----	0-6	Gravelly loam---	GM-GC, SM-SC	A-4	0-5	65-80	55-75	45-65	35-50	20-30	5-10
	6-11	Gravelly loam, gravelly clay loam.	GC, SC	A-6	0-5	60-80	55-75	45-65	35-50	25-35	10-15
	11-16	Very gravelly loam.	GM-GC	A-2	0-5	45-55	35-50	25-45	20-35	25-30	5-10
	16	Weathered bedrock	---	---	---	---	---	---	---	---	---
Broyles-----	0-13	Gravelly very fine sandy loam.	SM, GM	A-4	0	65-85	60-75	55-70	35-50	---	NP
	13-60	Stratified loam to gravelly loamy sand.	SM	A-2, A-4	0	70-100	60-95	30-50	25-45	---	NP
Perlor-----	0-7	Fine sandy loam	SM	A-2, A-4	0-5	85-100	80-100	70-90	25-40	15-25	NP-5
	7-14	Loam, sandy loam, gravelly sandy loam.	SM, ML	A-4	0-5	75-100	70-95	50-80	35-65	15-25	NP-5
	14	Weathered bedrock	---	---	---	---	---	---	---	---	---
4140----- Welch	0-4	Loam-----	CL-ML	A-4	0	95-100	95-100	85-95	60-70	25-30	5-10
	4-60	Stratified sandy loam to silty clay loam.	CL	A-6, A-7	0	80-100	75-100	65-90	50-70	35-45	15-20

\* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 6.--CLASSIFICATION OF THE SOILS

(An asterisk in the first column indicates that the soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series)

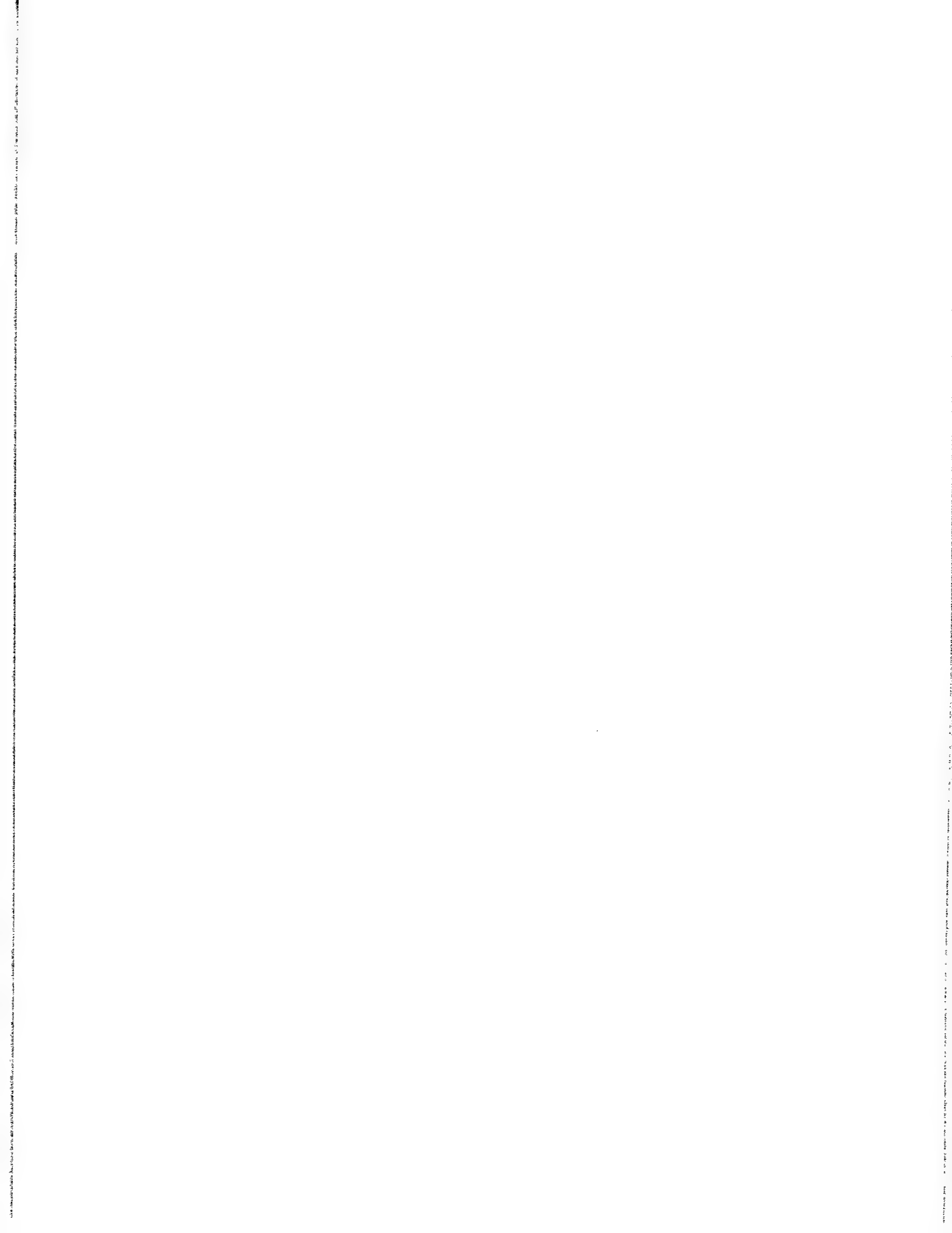
Soil name	Family or higher taxonomic class
Akerue-----	Clayey-skeletal, montmorillonitic, frigid, shallow Xerollic Durargids
Allor-----	Fine-loamy, mixed, mesic Durixerollic Haplargids
Atlow-----	Loamy-skeletal, mixed, mesic Lithic Xerollic Haplargids
Attella-----	Loamy-skeletal, mixed (calcareous), frigid Lithic Xeric Torriorthents
Barrier-----	Loamy, mixed, frigid, shallow Haploxerollic Durorthids
Batan-----	Fine-silty, mixed (calcareous), mesic Durorthidic Torriorthents
Belate-----	Loamy-skeletal, mixed, frigid Aridic Argixerolls
Belted-----	Loamy, mixed, mesic, shallow Haplic Durargids
Beoska-----	Fine-loamy, mixed, mesic Duric Natrargids
Blackhawk-----	Loamy, mixed, mesic, shallow Entic Durorthids
Broyles-----	Coarse-loamy, mixed, mesic Duric Camborthids
Bubus-----	Coarse-loamy, mixed (calcareous), mesic Durorthidic Torriorthents
Bucan-----	Fine, montmorillonitic, frigid Xerollic Haplargids
Buffaran-----	Clayey, montmorillonitic, mesic, shallow Xerollic Durargids
Burrita-----	Clayey-skeletal, montmorillonitic, mesic Lithic Xerollic Haplargids
Caniwe-----	Fine-silty, mixed, mesic Aridic Duric Haploxerolls
Caphor-----	Coarse-loamy, mixed (calcareous), mesic Durorthidic Torriorthents
Chad-----	Fine, mixed, frigid Aridic Argixerolls
Chedehap-----	Coarse-loamy, mixed, mesic Xerollic Camborthids
Chiara-----	Loamy, mixed, mesic, shallow Xerollic Durorthids
Clan Alpine-----	Loamy-skeletal, mixed, frigid Typic Argixerolls
Cleavage-----	Loamy-skeletal, mixed, frigid Lithic Argixerolls
Colbar-----	Fine-loamy, mixed, mesic Xerollic Haplargids
Coztur-----	Loamy, mixed, frigid Lithic Xerollic Haplargids
Creemon-----	Coarse-silty, mixed, mesic Duric Camborthids
Cren-----	Coarse-silty, mixed (calcareous), mesic Durorthidic Torriorthents
Davey-----	Sandy, mixed, mesic Xerollic Camborthids
Decram-----	Loamy-skeletal, mixed Typic Cryoborolls
Defler-----	Loamy-skeletal, mixed (calcareous), mesic Typic Torriorthents
Desatoya-----	Clayey over loamy-skeletal, montmorillonitic, mesic Durixerollic Haplargids
Desatoya Variant-----	Fine-loamy, mixed, mesic Xerollic Haplargids
Dewar-----	Loamy, mixed, mesic, shallow Xerollic Durargids
Duco-----	Loamy-skeletal, mixed, mesic Lithic Argixerolls
Eastwell-----	Loamy-skeletal, mixed, mesic, shallow Haploxerollic Durorthids
Enko-----	Coarse-loamy, mixed, mesic Durixerollic Camborthids
Fenster-----	Fine-silty, mixed (calcareous), frigid Typic Torriorthents
Filiran-----	Fine, montmorillonitic, mesic Haploxerollic Nadurargids
Fortank-----	Fine, montmorillonitic, frigid Xerollic Haplargids
Gando-----	Loamy-skeletal, mixed, frigid Lithic Haploxerolls
Genaw-----	Loamy, mixed, mesic, shallow Xerollic Haplargids
Glean-----	Loamy-skeletal, mixed, frigid Pachic Haploxerolls
Glyphs-----	Fine-loamy, mixed, mesic Durixerollic Haplargids
Granzan-----	Loamy-skeletal, carbonatic, frigid Typic Calcixerolls
Grassval-----	Loamy, mixed, mesic, shallow Xerollic Durargids
Grina-----	Loamy, mixed (calcareous), mesic, shallow Xeric Torriorthents
Gund-----	Fine-silty over clayey, mixed, nonacid, mesic Aquic Durorthidic Torriorthents
Hackwood-----	Fine-loamy, mixed Pachic Cryoborolls
Halacan-----	Loamy-skeletal, carbonatic Cryic Lithic Rendolls
Handy-----	Fine, montmorillonitic, frigid Xerollic Haplargids
Hapgood-----	Loamy-skeletal, mixed Pachic Cryoborolls
Hatur-----	Loamy-skeletal, carbonatic Cryic Rendolls
Hessing-----	Coarse-loamy, mixed, mesic Typic Camborthids
Hooplite-----	Loamy-skeletal, mixed, mesic Lithic Xerollic Haplargids
Hopeka-----	Loamy-skeletal, carbonatic, frigid Lithic Xeric Torriorthents
Hymas-----	Loamy-skeletal, carbonatic, frigid Lithic Haploxerolls
Isolde-----	Mixed, mesic Typic Torripsamments
Itca-----	Clayey-skeletal, montmorillonitic, frigid Lithic Argixerolls
Itca Variant-----	Loamy, mixed, frigid, shallow Aridic Argixerolls
Izo-----	Sandy-skeletal, mixed, mesic Typic Torriorthents

TABLE 6.--CLASSIFICATION OF THE SOILS--Continued

Soil name	Family or higher taxonomic class
Izod-----	Loamy-skeletal, carbonatic, mesic Lithic Xeric Torriorthents
Jesse Camp-----	Fine-silty, mixed, frigid Xerollic Camborthids
Jung-----	Clayey-skeletal, montmorillonitic, mesic Lithic Xerollic Haplargids
Kawich-----	Mixed, mesic Typic Torripsamments
Kelk-----	Fine-silty, mixed, mesic Durixerollic Camborthids
Kingingham-----	Fine, montmorillonitic, mesic Typic Nadurargids
Kobeh-----	Loamy-skeletal, mixed, frigid Durixerollic Camborthids
Koyen-----	Coarse-loamy, mixed, mesic Typic Camborthids
Koynik-----	Loamy-skeletal, carbonatic, mesic Lithic Torriorthents
Kram-----	Loamy-skeletal, carbonatic, mesic Lithic Xeric Torriorthents
Labshaft-----	Loamy-skeletal, mixed Lithic Cryoborolls
Laped-----	Loamy, mixed, mesic, shallow Typic Durargids
Laxal-----	Loamy-skeletal, mixed (calcareous), mesic Durorthidic Torriorthents
Layview-----	Loamy-skeletal, mixed Argic Lithic Cryoborolls
Locane-----	Clayey-skeletal, montmorillonitic, frigid Lithic Xerollic Haplargids
Loncan-----	Loamy-skeletal, mixed, frigid Aridic Haploxerolls
Lopwash-----	Loamy-skeletal, mixed, frigid Typic Camborthids
McConnel-----	Sandy-skeletal, mixed, mesic Xerollic Camborthids
McVegas-----	Clayey-skeletal, montmorillonitic, mesic, shallow Haplic Nadurargids
Minat-----	Loamy-skeletal, mixed, mesic Xerollic Camborthids
Misad-----	Loamy-skeletal, mixed (calcareous), mesic Durorthidic Torriorthents
Muni-----	Loamy, mixed, mesic, shallow Haploxerollic Durargids
Needle Peak-----	Fine-silty, mixed (calcareous), mesic Aquic Torriorthents
Newlands-----	Fine-loamy, mixed Argic Cryoborolls
Newpass-----	Fine, montmorillonitic, mesic Haploxerollic Nadurargids
Ninemile-----	Clayey, montmorillonitic, frigid Lithic Argixerolls
Nobuck-----	Loamy-skeletal, mixed, frigid Xerollic Haplargids
Novacan-----	Fine, montmorillonitic, mesic Haploxerollic Durargids
Ocala-----	Fine-silty, mixed (calcareous), mesic Aeris Halaquepts
*Old Camp-----	Loamy-skeletal, mixed, mesic Lithic Xerollic Haplargids
Orovada-----	Coarse-loamy, mixed, mesic Durixerollic Camborthids
Osoll-----	Loamy-skeletal, mixed, mesic, shallow Typic Durorthids
Oxcorel-----	Fine, montmorillonitic, mesic Duric Natrargids
Packer-----	Loamy-skeletal, mixed Argic Cryoborolls
Paranat-----	Fine-silty, mixed (calcareous), mesic Fluvaquentic Haplaquolls
Perlor-----	Loamy, mixed (calcareous), mesic, shallow Typic Torriorthents
Pineval-----	Loamy-skeletal, mixed, mesic Durixerollic Haplargids
Poorcal-----	Coarse-loamy, mixed, frigid Durixerollic Calciorrhids
Puett-----	Loamy, mixed (calcareous), mesic, shallow Xeric Torriorthents
Pula-----	Clayey-skeletal, montmorillonitic, mesic Xerollic Haplargids
Punchbowl-----	Loamy, mixed, frigid Lithic Xerollic Haplargids
Rasille-----	Coarse-silty, mixed, mesic Durixerollic Camborthids
Ravenswood-----	Clayey-skeletal, montmorillonitic, frigid Typic Argixerolls
Relley-----	Fine-silty, mixed, mesic Duric Camborthids
Reluctan-----	Fine-loamy, mixed, frigid Aridic Argixerolls
Ricert-----	Fine-loamy, mixed, mesic Duric Natrargids
Robson-----	Clayey-skeletal, montmorillonitic, frigid Lithic Xerollic Haplargids
Roca-----	Clayey-skeletal, montmorillonitic, frigid Xerollic Haplargids
Rotinom-----	Fine-silty, mixed (calcareous), mesic Durorthidic Torrifluvents
Rutab-----	Loamy-skeletal, mixed, frigid Xerollic Camborthids
Settlemyer-----	Fine-loamy, mixed, mesic Fluvaquentic Haplaquolls
Shagnasty-----	Fine, montmorillonitic, frigid Typic Argixerolls
Shipley-----	Coarse-loamy, mixed (calcareous), frigid Xeric Torriorthents
Silverado-----	Coarse-loamy, mixed, frigid Durixerollic Camborthids
Simpark-----	Loamy-skeletal, mixed, frigid, shallow Xerollic Durargids
Skullwak-----	Fine, montmorillonitic (calcareous), mesic Aeris Halaquepts
Sodhouse-----	Loamy, mixed, mesic, shallow Typic Durorthids
Softscrabble-----	Loamy-skeletal, mixed, frigid Pachic Argixerolls
Sonoma-----	Fine-silty, mixed (calcareous), mesic Aeris Fluvaquents
Spasprey-----	Fine-loamy, mixed, mesic Haploxerollic Durargids
Spike-----	Loamy-skeletal, mixed, mesic Typic Haplargids
Stampede-----	Fine, montmorillonitic, frigid Aridic Durixerolls
Stingdorn-----	Loamy-skeletal, mixed, mesic, shallow Typic Durargids

TABLE 6.--CLASSIFICATION OF THE SOILS--Continued

Soil name	Family or higher taxonomic class
Sumine-----	Loamy-skeletal, mixed, frigid Aridic Argixerolls
Sundown-----	Mixed, mesic Typic Torripsamments
Teguro-----	Loamy, mixed, frigid Lithic Argixerolls
Tenabo-----	Loamy, mixed, mesic, shallow Typic Nadurargids
Tessfive-----	Loamy, mixed (calcareous), mesic Lithic Xeric Torriorthents
Tomel-----	Loamy-skeletal, mixed, mesic, shallow Typic Durargids
Torripsammentic Haploxerolls-----	Torripsammentic Haploxerolls
Torro-----	Loamy-skeletal, mixed, frigid Aridic Argixerolls
Trunk-----	Fine, montmorillonitic, mesic Xerollic Haplargids
Tulase-----	Coarse-silty, mixed (calcareous), mesic Durorthidic Xeric Torriorthents
Typic Argixerolls-----	Typic Argixerolls
Umberland-----	Fine, montmorillonitic (calcareous), mesic Aeric Halaquepts
Unius-----	Loamy, mixed, mesic, shallow Haploxerollic Durorthids
Unsel-----	Fine-loamy, mixed, mesic Duric Haplargids
Unsel Variant-----	Fine-loamy, mixed, mesic Duric Haplargids
Valmy-----	Coarse-loamy, mixed (calcareous), mesic Durorthidic Torriorthents
Walti-----	Fine, montmorillonitic, frigid Aridic Argixerolls
Wardenot-----	Sandy-skeletal, mixed, mesic Typic Torriorthents
Welch-----	Fine-loamy, mixed, frigid Cumulic Haplaquolls
Wendane-----	Fine-silty, mixed (calcareous), mesic Aeric Halaquepts
Whirlo-----	Loamy-skeletal, mixed, mesic Typic Camborthids
Wholan-----	Coarse-silty, mixed, mesic Typic Camborthids
Wieland-----	Fine, montmorillonitic, mesic Durixerollic Haplargids
Xine-----	Loamy-skeletal, mixed, frigid Aridic Calcixerolls
Yobe-----	Fine-silty, mixed (calcareous), mesic Aeric Halaquepts
Zaidy-----	Fine-loamy, mixed, mesic Haploxerollic Durargids
Zineb-----	Loamy-skeletal, mixed, mesic Durixerollic Camborthids
Zoesta-----	Fine, montmorillonitic, frigid Xerollic Paleargids
Zoesta Variant-----	Fine, montmorillonitic, mesic Xerollic Paleargids



## **Rangeland Plants and Woodland Understory**

## 120--Akerue-Simpark-Robson association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Akerue	Simpark	Robson	1	2	3	4
Indian ricegrass	ORHY	5-15	5-15	5-10	---	5-10	---	---
Needleandthread	STCO4	5-15	5-15	---	---	2-5	---	---
Pine bluegrass	POSC	2-5	2-5	---	5-10	2-5	---	---
Bluebunch wheatgrass	AGSP	1-3	1-3	2-5	5-10	5-10	---	---
Thurber needlegrass	STTH2	---	---	5-15	---	20-30	---	---
Sandberg bluegrass	POSE	---	---	5-10	---	---	---	---
Bottlebrush squirreltail	SIHY	---	---	2-5	---	---	---	---
Idaho fescue	FEID	---	---	---	10-15	---	---	---
Other perennial grasses	PPGG	5-10	5-10	---	10-15	5-10	---	---
Perennial forbs	PPFF	5-15	5-15	5-10	5-10	5-10	---	---
Black sagebrush	ARARN	20-25	20-25	---	5-15	---	---	---
Fourwing saltbush	ATCA2	2-5	2-5	---	---	---	---	---
Bud sagebrush	ARSP5	2-5	2-5	---	---	---	---	---
Low sagebrush	ARAR8	---	---	25-30	5-15	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	10-15	---	---
Rabbitbrush	CHRY9	---	---	---	---	2-5	---	---
Antelope bitterbrush	PUTR2	---	---	---	---	1-10	---	---
Other shrubs	SSSS	10-20	10-20	10-15	5-10	---	---	---

Range site symbol	028B016N	028B016N	028B045N	028B038N	028B007N	None	None
Potential production (lb/acre):							
Favorable years	500	500	800	800	1,000	---	---
Normal years	250	250	600	600	750	---	---
Unfavorable years	150	150	400	400	600	---	---

## 121--Akerue-Simpark-Punchbowl association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Akerue	Simpark	Punchbowl	1	2	3
Indian ricegrass	ORHY	5-15	5-15	5-15	5-10	20-30	---
Needleandthread	STC04	5-15	5-15	5-15	---	10-20	---
Pine bluegrass	POSC	2-5	2-5	2-5	---	---	---
Bluebunch wheatgrass	AGSP	1-3	1-3	1-3	2-5	---	---
Thurber needlegrass	STTH2	---	---	---	5-15	---	---
Sandberg bluegrass	POSE	---	---	---	5-10	2-5	---
Bottlebrush squirreltail	SIHY	---	---	---	2-5	5-10	---
Other perennial grasses	PPGG	5-10	5-10	5-10	---	---	---
Perennial forbs	PPFF	5-15	5-15	5-15	5-10	2-5	---
Black sagebrush	ARARN	20-25	20-25	20-25	---	---	---
Fourwing saltbush	ATCA2	2-5	2-5	2-5	---	---	---
Bud sagebrush	ARSP5	2-5	2-5	2-5	---	---	---
Low sagebrush	ARAR8	---	---	---	25-30	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	15-20	---
Other shrubs	SSSS	10-20	10-20	10-20	10-15	5-15	---

Range site symbol	028B016N	028B016N	028B016N	028B045N	028B010N	None
Potential production (lb/acre):						
Favorable years	500	500	500	800	800	---
Normal years	250	250	250	600	600	---
Unfavorable years	150	150	150	400	400	---



## 141--Unsel-Wardenot-Belted association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Unsel	Wardenot	Belted	1	2
Galleta	HIJA	10-25	10-25	10-25	---	---
Indian ricegrass	ORHY	5-10	5-10	5-10	5-15	20-30
Bottlebrush squirreltail	SIHY	2-5	2-5	2-5	---	5-10
Desert needlegrass	STSP3	2-5	2-5	2-5	---	---
Needleandthread	STCO4	---	---	---	5-15	10-20
Pine bluegrass	POSC	---	---	---	2-5	---
Bluebunch wheatgrass	AGSP	---	---	---	1-3	---
Sandberg bluegrass	POSE	---	---	---	---	2-5
Other perennial grasses	PPGG	---	---	---	5-10	---
Perennial forbs	PPFF	4-10	4-10	4-10	5-15	2-5
Shadscale	ATCO	10-25	10-25	10-25	---	---
Bailey greasewood	SAVEB	5-15	5-15	5-15	---	---
Bud sagebrush	ARSP5	5-10	5-10	5-10	2-5	---
Winterfat	EULA5	5-10	5-10	5-10	---	---
Black sagebrush	ARARN	---	---	---	20-25	---
Fourwing saltbush	ATCA2	---	---	---	2-5	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	15-20
Other shrubs	SSSS	---	---	---	10-20	5-15

Range site symbol	029X017N	029X017N	029X017N	028B016N	028B010N
Potential production (lb/acre):					
Favorable years	350	350	350	500	800
Normal years	250	250	250	250	600
Unfavorable years	100	100	100	150	400

## 142--Unsel-Caphor-Chedehap association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Unsel	Caphor	Chedehap	1	2	3
Galleta	HIJA	10-25	---	---	---	---	---
Indian ricegrass	ORHY	5-10	5-15	15-25	---	5-15	20-30
Bottlebrush squirreltail	SIHY	2-5	2-5	2-5	5-10	5-15	5-10
Desert needlegrass	STSP3	2-5	---	---	---	---	---
Needleandthread	STCO4	---	5-10	---	---	1-3	10-20
Thurber needlegrass	STTH2	---	---	5-10	---	---	---
Sandberg bluegrass	POSE	---	---	---	---	2-5	2-5
Other perennial grasses	PPGG	---	5-10	---	T-10	---	---
Scarlet globemallow	SPCO	---	---	2-5	---	---	---
Other perennial forbs	PPFF	4-10	5-10	---	2-8	2-8	2-5
Shadscale	ATCO	10-25	30-40	---	30-50	30-40	---
Bailey greasewood	SAVEB	5-15	---	---	---	---	---
Bud sagebrush	ARSP5	5-10	5-10	5-10	5-15	20-30	---
Winterfat	EULA5	5-10	2-5	---	---	2-5	---
Fourwing saltbush	ATCA2	---	2-5	---	---	---	---
Spiny hopsage	GRSP	---	---	20-30	---	2-5	---
Wyoming big sagebrush	ARTRW*	---	---	15-25	---	---	15-20
Black greasewood	SAVE4	---	---	---	15-30	---	---
Seepweed	SUAED	---	---	---	2-15	---	---
Other shrubs	SSSS	---	5-15	5-10	---	2-5	5-15

Range site symbol	029X017N	028B017N	028B052N	024X003N	024X002N	028B010N
Potential production (lb/acre):						
Favorable years	350	700	600	600	700	800
Normal years	250	500	400	450	450	600
Unfavorable years	100	250	300	300	300	400

## 150--Chedehap-Enko-Ricert association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Chedehap	Enko	Ricert	1	2	3
Indian ricegrass	ORHY	15-25	20-30	5-15	15-25	20-30	5-15
Thurber needlegrass	STTH2	5-10	---	---	5-10	---	---
Bottlebrush squirreltail	SIHY	2-5	5-10	2-5	2-5	5-10	---
Needleandthread	STCO4	---	10-20	5-10	---	10-20	5-15
Sandberg bluegrass	POSE	---	2-5	---	---	2-5	---
Pine bluegrass	POSC	---	---	---	---	---	2-5
Bluebunch wheatgrass	AGSP	---	---	---	---	---	1-3
Other perennial grasses	PPGG	---	---	5-10	---	---	5-10
Scarlet globemallow	SPCO	2-5	---	---	2-5	---	---
Other perennial forbs	PPFF	---	2-5	5-10	---	2-5	5-15
Spiny hopsage	GRSP	20-30	---	---	20-30	---	---
Wyoming big sagebrush	ARTRW*	15-25	15-20	---	15-25	15-20	---
Bud sagebrush	ARSP5	5-10	---	5-10	5-10	---	2-5
Shadscale	ATCO	---	---	30-40	---	---	---
Winterfat	EULA5	---	---	2-5	---	---	---
Fourwing saltbush	ATCA2	---	---	2-5	---	---	2-5
Black sagebrush	ARARN	---	---	---	---	---	20-25
Other shrubs	SSSS	5-10	5-15	5-15	5-10	5-15	10-20

Range site symbol	028B052N	028B010N	028B017N	028B052N	028B010N	028B016N
Potential production (lb/acre):						
Favorable years	600	800	700	600	800	500
Normal years	400	600	500	400	600	250
Unfavorable years	300	400	250	300	400	150

## 160--Batan association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Batan	Batan, slightly saline	1	2
Bottlebrush squirreltail	SIHY	5-10	5-15	2-10	5-10
Indian ricegrass	ORHY	---	5-15	10-20	20-30
Sandberg bluegrass	POSE	---	2-5	---	2-5
Needleandthread	STCO4	---	1-3	---	10-20
Other perennial grasses	PPGG	T-10	---	---	---
Perennial forbs	PPFF	2-8	2-8	2-8	2-5
Shadscale	ATCO	30-50	30-40	---	---
Black greasewood	SAVE4	15-30	---	---	---
Bud sagebrush	ARSP5	5-15	20-30	2-5	---
Seepweed	SUAED	2-15	---	---	---
Spiny hopsage	GRSP	---	2-5	---	---
Winterfat	EULA5	---	2-5	60-70	---
Wyoming big sagebrush	ARTRW*	---	---	---	15-20
Other shrubs	SSSS	---	2-5	---	5-15

Range site symbol	024X003N	024X002N	024X004N	028B010N
Potential production (lb/acre):				
Favorable years	600	700	500	800
Normal years	450	450	350	600
Unfavorable years	300	300	200	400

## 161--Batan silt loam

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Batan	1	2	3
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	---
Indian ricegrass	ORHY	---	---	10-30	---
Alkali sacaton	SPAI	---	---	T-5	15-30
Basin wildrye	ELCI2	---	---	---	40-60
Inland saltgrass	DISPS2	---	---	---	5-10
Other perennial grasses	PPGG	T-10	T-10	---	---
Perennial forbs	PPFF	2-8	2-8	T-5	---
Shadscale	ATCO	30-50	30-50	---	---
Black greasewood	SAVE4	15-30	15-30	---	5-15
Bud sagebrush	ARSP5	5-15	5-15	---	---
Seepweed	SUAED	2-15	2-15	---	---
Sickle saltbush	ATFA	---	---	50-65	---
Alkali rabbitbrush	CHAL9	---	---	---	1-2
Rubber rabbitbrush	CHNA2	---	---	---	1-2
Range site symbol		024X003N	024X003N	024X012N	024X007N
Potential production (lb/acre):					
Favorable years		600	600	700	1,900
Normal years		450	450	400	1,400
Unfavorable years		300	300	200	800

## 162--Batan-Kelk association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Batan	Kelk, saline	Kelk, occasionally flooded	1	2
Bottlebrush squirreltail	SIHY	5-10	2-5	---	---	2-5
Basin wildrye	ELCI2	---	5-20	50-60	5-15	---
Indian ricegrass	ORHY	---	2-5	---	---	5-15
Western wheatgrass	AGSM	---	---	5-15	---	---
Inland saltgrass	DISPS2	---	---	---	5-10	---
Needleandthread	STCO4	---	---	---	---	5-10
Other perennial grasses	PPGG	T-10	---	---	---	5-10
Thelypody	THELY	---	2-4	---	---	---
Other perennial forbs	PPFF	2-8	---	2-8	T-5	5-10
Shadscale	ATCO	30-50	---	---	---	30-40
Black greasewood	SAVE4	15-30	20-30	2-10	60-75	---
Bud sagebrush	ARSP5	5-15	---	---	---	5-10
Seepweed	SUAED	2-15	---	---	---	---
Basin big sagebrush	ARTRT*	---	5-15	15-20	---	---
Wyoming big sagebrush	ARTRW*	---	5-10	---	---	---
Spiny hopsage	GRSP	---	5-15	---	---	---
Rubber rabbitbrush	CHNA2	---	---	2-5	---	---
Winterfat	EULA5	---	---	---	---	2-5
Fourwing saltbush	ATCA2	---	---	---	---	2-5
Other shrubs	SSSS	---	---	---	---	5-15

Range site symbol	024X003N	024X022N	024X006N	024X011N	028B017N
Potential production (lb/acre):					
Favorable years	600	800	1,500	500	700
Normal years	450	600	1,100	350	500
Unfavorable years	300	350	600	200	250

## 168--Batan-Bubus-Ocala association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Batan	Bubus	Ocala	1	2
Bottlebrush squirreltail	SIHY	5-10	5-10	---	---	5-15
Basin wildrye	ELCI2	---	---	40-60	50-60	---
Alkali sacaton	SPAI	---	---	15-30	---	---
Inland saltgrass	DISPS2	---	---	5-10	---	---
Western wheatgrass	AGSM	---	---	---	5-15	---
Indian ricegrass	ORHY	---	---	---	---	5-15
Sandberg bluegrass	POSE	---	---	---	---	2-5
Needleandthread	STCO4	---	---	---	---	1-3
Other perennial grasses	PPGG	T-10	T-10	---	---	---
Perennial forbs	PPFF	2-8	2-8	---	2-8	2-8
Shadscale	ATCO	30-50	30-50	---	---	30-40
Black greasewood	SAVE4	15-30	15-30	5-15	2-10	---
Bud sagebrush	ARSP5	5-15	5-15	---	---	20-30
Seepweed	SUAED	2-15	2-15	---	---	---
Alkali rabbitbrush	CHAL9	---	---	1-2	---	---
Rubber rabbitbrush	CHNA2	---	---	1-2	2-5	---
Basin big sagebrush	ARTRT*	---	---	---	15-20	---
Spiny hopsage	GRSP	---	---	---	---	2-5
Winterfat	EULA5	---	---	---	---	2-5
Other shrubs	SSSS	---	---	---	---	2-5

Range site symbol	024X003N	024X003N	024X007N	024X006N	024X002N
Potential production (lb/acre):					
Favorable years	600	600	1,900	1,500	700
Normal years	450	450	1,400	1,100	450
Unfavorable years	300	300	800	600	300

## 169--Batan-Ocala association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Batan	Ocala, occasionally flooded	Ocala, rarely flooded	1	2	3
Bottlebrush squirreltail	SIHY	5-10	---	---	---	---	---
Basin wildrye	ELCI2	---	5-15	5-15	50-60	---	---
Inland saltgrass	DISPS2	---	5-10	5-10	---	---	---
Western wheatgrass	AGSM	---	---	---	5-15	---	---
Thurber needlegrass	STTH2	---	---	---	---	---	20-50
Bluebunch wheatgrass	AGSP	---	---	---	---	---	5-10
Other perennial grasses	PPGG	T-10	---	---	---	---	---
Balsamroot	BALSA	---	---	---	---	---	2-4
Tapertip hawksbeard	CRAC2	---	---	---	---	---	2-4
Other perennial forbs	PPFF	2-8	T-5	T-5	2-8	---	---
Shadscale	ATCO	30-50	---	---	---	---	---
Black greasewood	SAVE4	15-30	60-75	60-75	2-10	---	---
Bud sagebrush	ARSP5	5-15	---	---	---	---	---
Seepweed	SUAED	2-15	---	---	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	15-20	---	---
Rubber rabbitbrush	CHNA2	---	---	---	2-5	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	---	15-20
Downy rabbitbrush	CHVIP	---	---	---	---	---	2-5
Spiny hopsage	GRSP	---	---	---	---	---	2-5
Other shrubs	SSSS	---	---	---	---	---	2-10
<hr/>							
Range site symbol		024X003N	024X011N	024X011N	024X006N	None	024X005N
Potential production (lb/acre):							
Favorable years		600	500	500	1,500	---	800
Normal years		450	350	350	1,100	---	600
Unfavorable years		300	200	200	600	---	400



## 170--Beoska-Orovada association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Beoska	Orovada	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-10	2-10	---	5-15
Indian ricegrass	ORHY	5-15	20-30	5-15	---	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-10	---	2-5
Needleandthread	STCO4	1-3	10-20	---	---	1-3
Thurber needlegrass	STTH2	---	---	0-20	20-50	---
Bluebunch wheatgrass	AGSP	---	---	---	5-10	---
Tapertip hawksbeard	CRAC2	---	---	1-2	2-4	---
Globemallow	SPHAE	---	---	1-2	---	---
Phlox	PHLOX	---	---	1-2	---	---
Balsamroot	BALSA	---	---	---	2-4	---
Other perennial forbs	PPFF	2-8	2-5	---	---	2-8
Shadscale	ATCO	30-40	---	---	---	30-40
Bud sagebrush	ARSP5	20-30	---	---	---	20-30
Spiny hopsage	GRSP	2-5	---	5-15	2-5	2-5
Winterfat	EULA5	2-5	---	---	---	2-5
Wyoming big sagebrush	ARTRW*	---	15-20	30-35	15-20	---
Downy rabbitbrush	CHVIP	---	---	---	2-5	---
Other shrubs	SSSS	2-5	5-15	---	2-10	2-5
Range site symbol						
		024X002N	028B010N	024X020N	024X005N	024X002N
Potential production (lb/acre):						
Favorable years		700	800	700	800	700
Normal years		450	600	450	600	450
Unfavorable years		300	400	300	400	300

171--Beoska silt loam, 2 to 8 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name	Inclusion number--			
		Beoska	1	2	3	4
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	5-15	2-10
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	2-10
Needleandthread	STCO4	1-3	1-3	1-3	1-3	---
Thurber needlegrass	STTH2	---	---	---	---	10-20
Tapertip hawksbeard	CRAC2	---	---	---	---	1-2
Globemallow	SPHAE	---	---	---	---	1-2
Phlox	PHLOX	---	---	---	---	1-2
Other perennial forbs	PPFF	2-8	2-8	2-8	2-8	---
Shadscale	ATCO	30-40	30-40	30-40	30-40	---
Bud sagebrush	ARSP5	20-30	20-30	20-30	20-30	---
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5	5-15
Winterfat	EULA5	2-5	2-5	2-5	2-5	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	30-35
Other shrubs	SSSS	2-5	2-5	2-5	2-5	---
<hr/>						
Range site symbol		024X002N	024X002N	024X002N	024X002N	024X020N
Potential production (lb/acre):						
Favorable years		700	700	700	700	700
Normal years		450	450	450	450	450
Unfavorable years		300	300	300	300	300

## 172--Beoska-Tenabo complex

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Beoska	Tenabo	1	2
Bottlebrush squirreltail	SIHY	5-15	5-15	2-10	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-10	2-5
Needleandthread	STCO4	1-3	1-3	---	1-3
Thurber needlegrass	STTH2	---	---	10-20	---
Tapertip hawksbeard	CRAC2	---	---	1-2	---
Globemallow	SPHAE	---	---	1-2	---
Phlox	PHLOX	---	---	1-2	---
Other perennial forbs	PPFF	2-8	2-8	---	2-8
Shadscale	ATCO	30-40	30-40	---	30-40
Bud sagebrush	ARSP5	20-30	20-30	---	20-30
Spiny hopsage	GRSP	2-5	2-5	5-15	2-5
Winterfat	EULA5	2-5	2-5	---	2-5
Wyoming big sagebrush	ARTRW*	---	---	30-35	---
Other shrubs	SSSS	2-5	2-5	---	2-5
Range site symbol					
		024X002N	024X002N	024X020N	024X002N
Potential production (lb/acre):					
Favorable years		700	700	700	700
Normal years		450	450	450	450
Unfavorable years		300	300	300	300

## 173--Beoska-Allor association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Beoska	Allor	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-10	2-10	2-10	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	---	2-10	2-10	2-5
Needleandthread	STC04	1-3	---	---	---	1-3
Pine bluegrass	POSC	---	5-15	---	---	---
Thurber needlegrass	STTH2	---	---	10-20	10-20	---
Other perennial grasses	PPGG	---	5-10	---	---	---
Tapertip hawksbeard	CRAC2	---	---	1-2	1-2	---
Globemallow	SPHAE	---	---	1-2	1-2	---
Phlox	PHLOX	---	---	1-2	1-2	---
Other perennial forbs	PPFF	2-8	5-10	---	---	2-8
Shadscale	ATCO	30-40	---	---	---	30-40
Bud sagebrush	ARSP5	20-30	---	---	---	20-30
Spiny hopsage	GRSP	2-5	10-20	5-15	5-15	2-5
Winterfat	EULA5	2-5	---	---	---	2-5
Wyoming big sagebrush	ARTRW*	---	10-20	30-35	30-35	---
Nevada ephedra	EPNE	---	5-10	---	---	---
Other shrubs	SSSS	2-5	---	---	---	2-5

Range site symbol	024X002N	027X008N	024X020N	024X020N	024X002N
Potential production (lb/acre):					
Favorable years	700	700	700	700	700
Normal years	450	500	450	450	450
Unfavorable years	300	300	300	300	300

## 174--Beoska-Chiara association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Beoska	Chiara	1	2	3
Bottlebrush squirreltail	SIHY	5-15	---	2-10	---	5-15
Indian ricegrass	ORHY	5-15	---	5-15	---	5-15
Sandberg bluegrass	POSE	2-5	---	2-10	---	2-5
Needleandthread	STCO4	1-3	---	---	---	1-3
Thurber needlegrass	STTH2	---	20-50	10-20	---	---
Bluebunch wheatgrass	AGSP	---	5-10	---	---	---
Basin wildrye	ELCI2	---	---	---	30-50	---
Nevada bluegrass	PONE3	---	---	---	2-5	---
Western wheatgrass	AGSM	---	---	---	2-5	---
Other perennial grasses	PPGG	---	---	---	15-25	---
Balsamroot	BALSA	---	2-4	---	---	---
Tapertip hawksbeard	CRAC2	---	2-4	1-2	---	---
Globemallow	SPHAE	---	---	1-2	---	---
Phlox	PHLOX	---	---	1-2	---	---
Other perennial forbs	PPFF	2-8	---	---	2-5	2-8
Shadscale	ATCO	30-40	---	---	---	30-40
Bud sagebrush	ARSP5	20-30	---	---	---	20-30
Spiny hopsage	GRSP	2-5	2-5	5-15	---	2-5
Winterfat	EULA5	2-5	---	---	---	2-5
Wyoming big sagebrush	ARTRW*	---	15-20	30-35	---	---
Downy rabbitbrush	CHVIP	---	2-5	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	5-10	---
Other shrubs	SSSS	2-5	2-10	---	5-10	2-5
Range site symbol		O24X002N	O24X005N	O24X020N	O28B003N	O24X002N
Potential production (lb/acre):						
Favorable years		700	800	700	2,600	700
Normal years		450	600	450	1,250	450
Unfavorable years		300	400	300	800	300

## 175--Beoska-Whirlo-Misad association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Beoska	Whirlo	Misad	1	2
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	2-10	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-10	2-5
Needleandthread	STCO4	1-3	1-3	1-3	---	1-3
Thurber needlegrass	STTH2	---	---	---	10-20	---
Tapertip hawksbeard	CRAC2	---	---	---	1-2	---
Globemallow	SPHAE	---	---	---	1-2	---
Phlox	PHLOX	---	---	---	1-2	---
Other perennial forbs	PPFF	2-8	2-8	2-8	---	2-8
Shadscale	ATCO	30-40	30-40	30-40	---	30-40
Bud sagebrush	ARSP5	20-30	20-30	20-30	---	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5	5-15	2-5
Winterfat	EULA5	2-5	2-5	2-5	---	2-5
Wyoming big sagebrush	ARTRW*	---	---	---	30-35	---
Other shrubs	SSSS	2-5	2-5	2-5	---	2-5

Range site symbol	024X002N	024X002N	024X002N	024X020N	024X002N
Potential production (lb/acre):					
Favorable years	700	700	700	700	700
Normal years	450	450	450	450	450
Unfavorable years	300	300	300	300	300

## 177--Beoska-Dewar-Orovada association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Beoska	Dewar	Orovada	1	2	3
Bottlebrush squirreltail	SIHY	5-15	---	5-10	---	---	5-15
Indian ricegrass	ORHY	5-15	---	20-30	---	15-30	5-15
Sandberg bluegrass	POSE	2-5	---	2-5	---	---	2-5
Needleandthread	STCO4	1-3	---	10-20	---	---	1-3
Thurber needlegrass	STTH2	---	20-50	---	20-50	5-10	---
Bluebunch wheatgrass	AGSP	---	5-10	---	5-10	---	---
Other perennial grasses	PPGG	---	---	---	---	5-15	---
Balsamroot	BALSA	---	2-4	---	2-4	---	---
Tapertip hawksbeard	CRAC2	---	2-4	---	2-4	---	---
Globemallow	SPHAE	---	---	---	---	2-4	---
Other perennial forbs	PPFF	2-8	---	2-5	---	---	2-8
Shadscale	ATCO	30-40	---	---	---	2-5	30-40
Bud sagebrush	ARSP5	20-30	---	---	---	---	20-30
Spiny hopsage	GRSP	2-5	2-5	---	2-5	2-5	2-5
Winterfat	EULA5	2-5	---	---	---	---	2-5
Wyoming big sagebrush	ARTRW*	---	15-20	15-20	15-20	15-30	---
Downy rabbitbrush	CHVIP	---	2-5	---	2-5	---	---
Other shrubs	SSSS	2-5	2-10	5-15	2-10	2-5	2-5

Range site symbol	024X002N	024X005N	028B010N	024X005N	024X045N	024X002N
Potential production (lb/acre):						
Favorable years	700	800	800	800	350	700
Normal years	450	600	600	600	200	450
Unfavorable years	300	400	400	400	100	300

## 180--Needle Peak-Batan-Yobe association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Needle Peak	Batan	Yobe	1	2
Basin wildrye	ELCI2	50-60	---	40-60	5-20	---
Western wheatgrass	AGSM	5-15	---	---	---	---
Bottlebrush squirreltail	SIHY	---	5-10	---	2-5	2-5
Alkali sacaton	SPAI	---	---	15-30	---	---
Inland saltgrass	DISPS2	---	---	5-10	---	---
Indian ricegrass	ORHY	---	---	---	2-5	5-15
Needleandthread	STC04	---	---	---	---	5-10
Other perennial grasses	PPGG	---	T-10	---	---	5-10
Thelypody	THELY	---	---	---	2-4	---
Other perennial forbs	PPFF	2-8	2-8	---	---	5-10
Basin big sagebrush	ARTRT*	15-20	---	---	5-15	---
Black greasewood	SAVE4	2-10	15-30	5-15	20-30	---
Rubber rabbitbrush	CHNA2	2-5	---	1-2	---	---
Shadscale	ATCO	---	30-50	---	---	30-40
Bud sagebrush	ARSP5	---	5-15	---	---	5-10
Seepweed	SUAED	---	2-15	---	---	---
Alkali rabbitbrush	CHAL9	---	---	1-2	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	5-10	---
Spiny hopsage	GRSP	---	---	---	5-15	---
Winterfat	EULA5	---	---	---	---	2-5
Fourwing saltbush	ATCA2	---	---	---	---	2-5
Other shrubs	SSSS	---	---	---	---	5-15

Range site symbol	024X006N	024X003N	024X007N	024X022N	028B017N
Potential production (lb/acre):					
Favorable years	1,500	600	1,900	800	700
Normal years	1,100	450	1,400	600	500
Unfavorable years	600	300	800	350	250



## 190--Wardenot-Sundown association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Wardenot	Sundown	1	2
Galleta	HIJA	10-25	---	10-25	---
Indian ricegrass	ORHY	5-10	20-30	5-10	15-25
Bottlebrush squirreltail	SIHY	2-5	---	2-5	---
Desert needlegrass	STSP3	2-5	---	2-5	---
Sand dropseed	SPCR	---	3-10	---	---
Needleandthread	STCO4	---	---	---	5-10
Basin wildrye	ELCI2	---	---	---	2-5
Bluebunch wheatgrass	AGSP	---	---	---	2-5
Other perennial grasses	PPGG	---	5-15	---	---
Perennial forbs	PPFF	4-10	5-10	4-10	5-10
Shadscale	ATCO	10-25	---	10-25	---
Bailey greasewood	SAVEB	5-15	---	5-15	---
Bud sagebrush	ARSP5	5-10	5-10	5-10	2-5
Winterfat	EULA5	5-10	5-10	5-10	5-10
Fourwing saltbush	ATCA2	---	15-25	---	---
Spiny hopsage	GRSP	---	1-5	---	---
Black sagebrush	ARARN	---	---	---	20-30
Small rabbitbrush	CHVIS	---	---	---	2-5
Other shrubs	SSSS	---	10-20	---	---

Range site symbol	029X017N	029X012N	029X017N	028B011N
Potential production (lb/acre):				
Favorable years	350	500	350	950
Normal years	250	350	250	700
Unfavorable years	100	200	100	400

## 191--Wardenot-Laxal association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Wardenot	Laxal	Wardenot, strongly saline	1	2
Galleta	HIJA	10-25	10-25	---	10-25	---
Indian ricegrass	ORHY	5-10	5-10	---	5-10	---
Bottlebrush squirreltail	SIHY	2-5	2-5	5-10	2-5	---
Desert needlegrass	STSP3	2-5	2-5	---	2-5	---
Alkali sacaton	SPAI	---	---	---	---	5-10
Inland saltgrass	DISPS2	---	---	---	---	5-8
Basin wildrye	ELCI2	---	---	---	---	2-5
Other perennial grasses	PPGG	---	---	T-10	---	2-5
Perennial forbs	PPFF	4-10	4-10	2-8	4-10	2-5
Shadscale	ATCO	10-25	10-25	30-50	10-25	2-5
Bailey greasewood	SAVEB	5-15	5-15	---	5-15	---
Bud sagebrush	ARSP5	5-10	5-10	5-15	5-10	---
Winterfat	EULA5	5-10	5-10	---	5-10	---
Black greasewood	SAVE4	---	---	15-30	---	50-60
Seepweed	SUAED	---	---	2-15	---	---
Iodinebush	ALOC2	---	---	---	---	2-5
Other shrubs	SSSS	---	---	---	---	5-10

Range site symbol	029X017N	029X017N	024X003N	029X017N	028B020N
Potential production (lb/acre):					
Favorable years	350	350	600	350	600
Normal years	250	250	450	250	450
Unfavorable years	100	100	300	100	200

## 200--Izo-Misad association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Izo	Misad	1	2
Galleta	HIJA	10-25	---	10-25	---
Indian ricegrass	ORHY	5-10	5-15	5-10	---
Bottlebrush squirreltail	SIHY	2-5	5-15	2-5	5-10
Desert needlegrass	STSP3	2-5	---	2-5	---
Sandberg bluegrass	POSE	---	2-5	---	---
Needleandthread	STCO4	---	1-3	---	---
Other perennial grasses	PPGG	---	---	---	T-10
Perennial forbs	PPFF	4-10	2-8	4-10	2-8
Shadscale	ATCO	10-25	30-40	10-25	30-50
Bailey greasewood	SAVEB	5-15	---	5-15	---
Bud sagebrush	ARSP5	5-10	20-30	5-10	5-15
Winterfat	EULA5	5-10	2-5	5-10	---
Spiny hopsage	GRSP	---	2-5	---	---
Black greasewood	SAVE4	---	---	---	15-30
Seepweed	SUAED	---	---	---	2-15
Other shrubs	SSSS	---	2-5	---	---
<hr/>					
Range site symbol		O29X017N	O24X002N	O29X017N	O24X003N
Potential production (lb/acre):					
Favorable years		350	700	350	600
Normal years		250	450	250	450
Unfavorable years		100	300	100	300

## 201--Izo-Bubus association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Izo	Bubus	1	2
Galleta	HIJA	10-25	---	---	---
Indian ricegrass	ORHY	5-10	---	---	---
Bottlebrush squirreltail	SIHY	2-5	5-10	5-10	---
Desert needlegrass	STSP3	2-5	---	---	---
Other perennial grasses	PPGG	---	T-10	T-10	---
Perennial forbs	PPFF	4-10	2-8	2-8	---
Shadscale	ATCO	10-25	30-50	30-50	---
Bailey greasewood	SAVEB	5-15	---	---	---
Bud sagebrush	ARSP5	5-10	5-15	5-15	---
Winterfat	EULA5	5-10	---	---	---
Black greasewood	SAVE4	---	15-30	15-30	---
Seepweed	SUAED	---	2-15	2-15	---

Range site symbol	029X017N	024X003N	024X003N	None
Potential production (lb/acre):				
Favorable years	350	600	600	---
Normal years	250	450	450	---
Unfavorable years	100	300	300	---

## 210--Laxal association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Laxal	Laxal, occasionally flooded	1	2	3
Galleta	HIJA	10-25	10-25	5-20	---	---
Indian ricegrass	ORHY	5-10	5-10	5-10	2-5	---
Bottlebrush squirreltail	SIHY	2-5	2-5	---	2-5	5-10
Desert needlegrass	STSP3	2-5	2-5	---	---	---
Needlegrass	STIPA	---	---	5-15	---	---
Basin wildrye	ELCI2	---	---	---	10-20	---
Needleandthread	STCO4	---	---	---	2-5	---
Other perennial grasses	PPGG	---	---	10-15	5-10	T-10
Perennial forbs	PPFF	4-10	4-10	3-8	5-10	2-8
Annual forbs	A AFF	---	---	2-5	---	---
Shadscale	ATCO	10-25	10-25	---	---	30-50
Bailey greasewood	SAVEB	5-15	5-15	---	---	---
Bud sagebrush	ARSP5	5-10	5-10	5-10	---	5-15
Winterfat	EULA5	5-10	5-10	2-5	---	---
Nevada ephedra	EPNE	---	---	2-5	2-5	---
Basin big sagebrush	ARTRT*	---	---	---	10-15	---
Greene rabbitbrush	CHGR6	---	---	---	2-5	---
Fourwing saltbush	ATCA2	---	---	---	2-5	---
Black greasewood	SAVE4	---	---	---	---	15-30
Seepweed	SUAED	---	---	---	---	2-15
Other shrubs	SSSS	---	---	10-20	5-10	---
Range site symbol		029X017N	029X017N	029X008N	028B009N	024X003N
Potential production (lb/acre):						
Favorable years		350	350	700	700	600
Normal years		250	250	400	400	450
Unfavorable years		100	100	200	300	300

211--Laxal gravelly fine sandy loam, occasionally flooded, 0 to 2 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Laxal	1	2
Galleta	HIJA	10-25	---	5-20
Indian ricegrass	ORHY	5-10	2-5	5-10
Bottlebrush squirreltail	SIHY	2-5	2-5	---
Desert needlegrass	STSP3	2-5	---	---
Basin wildrye	ELCI2	---	10-20	---
Needleandthread	STCO4	---	2-5	---
Needlegrass	STIPA	---	---	5-15
Other perennial grasses	PPGG	---	5-10	10-15
Perennial forbs	PPFF	4-10	5-10	3-8
Annual forbs	AAFF	---	---	2-5
Shadscale	ATCO	10-25	---	---
Bailey greasewood	SAVEB	5-15	---	---
Bud sagebrush	ARSP5	5-10	---	5-10
Basin big sagebrush	ARTRT*	---	10-15	---
Greene rabbitbrush	CHGR6	---	2-5	---
Nevada ephedra	EPNE	---	2-5	2-5
Fourwing saltbush	ATCA2	---	2-5	---
Other shrubs	SSSS	---	5-10	10-20

Range site symbol	029X017N	028B009N	029X008N
Potential production (lb/acre):			
Favorable years	350	700	700
Normal years	250	400	400
Unfavorable years	100	300	200

## 212--Laxal-Tomel association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Laxal	Tomel	Laxal, occasionally flooded	1	2	3
Galleta	HIJA	10-25	10-25	10-25	---	5-20	---
Indian ricegrass	ORHY	5-10	5-10	5-10	---	5-10	2-5
Bottlebrush squirreltail	SIHY	2-5	2-5	2-5	5-10	---	---
Desert needlegrass	STSP3	2-5	2-5	2-55	---	---	---
Needlegrass	STIPA	---	---	---	---	5-15	---
Basin wildrye	ELCI2	---	---	---	---	---	2-5
Other perennial grasses	PPGG	---	---	---	T-10	10-15	5-10
Perennial forbs	PPFF	4-10	4-10	4-10	2-8	3-8	5-10
Annual forbs	AAFF	---	---	---	---	2-5	---
Shadscale	ATCO	10-25	10-25	10-25	30-50	---	---
Bailey greasewood	SAVEB	5-15	5-15	5-15	---	---	---
Bud sagebrush	ARSP5	5-10	5-10	5-10	5-15	5-10	---
Winterfat	EULA5	5-10	5-10	5-10	---	2-5	---
Black greasewood	SAVE4	---	---	---	15-30	---	---
Seepweed	SUAED	---	---	---	2-15	---	---
Nevada ephedra	EPNE	---	---	---	---	2-5	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	10-20
Rubber rabbitbrush	CHNA2	---	---	---	---	---	2-5
Other shrubs	SSSS	---	---	---	---	10-20	10-25
Range site symbol		029X017N	029X017N	029X017N	024X003N	029X008N	029X009N
Potential production (lb/acre):							
Favorable years		350	350	350	600	700	700
Normal years		250	250	250	450	400	500
Unfavorable years		100	100	100	300	200	200

## 220--Blackhawk very fine sandy loam, 2 to 8 percent slopes

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Blackhawk	1	2	3
Bottlebrush squirreltail	SIHY	5-15	2-5	2-10	5-10
Indian ricegrass	ORHY	5-15	2-5	5-15	---
Sandberg bluegrass	POSE	2-5	---	2-10	---
Needleandthread	STCO4	1-3	2-5	---	---
Basin wildrye	ELCI2	---	10-20	---	---
Thurber needlegrass	STTH2	---	---	10-20	---
Other perennial grasses	PPGG	---	5-10	---	T-10
Tapertip hawksbeard	CRAC2	---	---	1-2	---
Globemallow	SPHAE	---	---	1-2	---
Phlox	PHLOX	---	---	1-2	---
Other perennial forbs	PPFF	2-8	5-10	---	2-8
Shadscale	ATCO	30-40	---	---	30-50
Bud sagebrush	ARSP5	20-30	---	---	5-15
Spiny hopsage	GRSP	2-5	---	5-15	---
Winterfat	EULA5	2-5	---	---	---
Basin big sagebrush	ARTRT*	---	10-15	---	---
Greene rabbitbrush	CHGR6	---	2-5	---	---
Nevada ephedra	EPNE	---	2-5	---	---
Fourwing saltbush	ATCA2	---	2-5	---	---
Wyoming big sagebrush	ARTRW*	---	---	30-35	---
Black greasewood	SAVE4	---	---	---	15-30
Seepweed	SUAED	---	---	---	2-15
Other shrubs	SSSS	2-5	5-10	---	---

Range site symbol	O24X002N	O28B009N	O24X020N	O24X003N
Potential production (lb/acre):				
Favorable years	700	700	700	600
Normal years	450	400	450	450
Unfavorable years	300	300	300	300



## 221--Blackhawk-Tenabo-Desatoya Variant association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Blackhawk	Tenabo	Desatoya Variant	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	---	---	---	5-10
Indian ricegrass	ORHY	5-15	5-15	10-15	10-15	15-30	5-15
Sandberg bluegrass	POSE	2-5	2-5	---	---	---	---
Needleandthread	STCO4	1-3	1-3	---	---	---	---
Thurber needlegrass	STTH2	---	---	10-15	10-15	5-10	---
Bluegrass	POA++	---	---	2-10	2-10	---	---
Pine bluegrass	POSC	---	---	---	---	---	5-15
Other perennial grasses	PPGG	---	---	5-20	5-20	5-15	5-10
Globemallow	SPHAE	---	---	2-5	2-5	2-4	---
Other perennial forbs	PPFF	2-8	2-8	---	---	---	5-10
Shadscale	ATCO	30-40	30-40	---	---	2-5	---
Bud sagebrush	ARSP5	20-30	20-30	---	---	---	---
Spiny hopsage	GRSP	2-5	2-5	---	---	2-5	10-20
Winterfat	EULA5	2-5	2-5	---	---	---	---
Black sagebrush	ARARN	---	---	25-35	25-35	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	15-30	10-20
Nevada ephedra	EPNE	---	---	---	---	---	5-10
Other shrubs	SSSS	2-5	2-5	5-35	5-35	2-5	---
Range site symbol							
		024X002N	024X002N	024X030N	024X030N	024X045N	027X008N
Potential production (lb/acre):							
Favorable years		700	700	500	500	350	700
Normal years		450	450	350	350	200	500
Unfavorable years		300	300	250	250	100	300

## 231--Broyles very fine sandy loam, 2 to 4 percent slopes

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Broyles	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5
Needleandthread	STCO4	1-3	1-3	1-3	1-3
Perennial forbs	PPFF	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-40	30-40	30-40
Bud sagebrush	ARSP5	20-30	20-30	20-30	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5
Winterfat	EULA5	2-5	2-5	2-5	2-5
Other shrubs	SSSS	2-5	2-5	2-5	2-5
Range site symbol		024X002N	024X002N	024X002N	024X002N
Potential production (lb/acre):					
Favorable years		700	700	700	700
Normal years		450	450	450	450
Unfavorable years		300	300	300	300

## 235--Broyles-Creemon association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Broyles	Creemon	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-10	5-15	2-10
Indian ricegrass	ORHY	5-15	5-15	---	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	---	2-5	2-10
Needleandthread	STCO4	1-3	1-3	---	1-3	---
Thurber needlegrass	STTH2	---	---	---	---	10-20
Other perennial grasses	PPGG	---	---	T-10	---	---
Tapertip hawksbeard	CRAC2	---	---	---	---	1-2
Globemallow	SPHAE	---	---	---	---	1-2
Phlox	PHLOX	---	---	---	---	1-2
Other perennial forbs	PPFF	2-8	2-8	2-8	2-8	---
Shadscale	ATCO	30-40	30-40	30-50	30-40	---
Bud sagebrush	ARSP5	20-30	20-30	5-15	20-30	---
Spiny hopsage	GRSP	2-5	2-5	---	2-5	5-15
Winterfat	EULA5	2-5	2-5	---	2-5	---
Black greasewood	SAVE4	---	---	15-30	---	---
Seepweed	SUAED	---	---	2-15	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	30-35
Other shrubs	SSSS	2-5	2-5	---	2-5	---
<hr/>						
Range site symbol		024X002N	024X002N	024X003N	024X002N	024X020N
Potential production (lb/acre):						
Favorable years		700	700	600	700	700
Normal years		450	450	450	450	450
Unfavorable years		300	300	300	300	300

## 236--Broyles association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Broyles	Broyles, moderately saline	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-10	2-5	5-15	2-10
Indian ricegrass	ORHY	5-15	---	2-5	5-15	5-15
Sandberg bluegrass	POSE	2-5	---	---	2-5	2-10
Needleandthread	STCO4	1-3	---	---	1-3	---
Basin wildrye	ELCI2	---	---	5-20	---	---
Thurber needlegrass	STTH2	---	---	---	---	10-20
Other perennial grasses	PPGG	---	T-10	---	---	---
Thelypody	THELY	---	---	2-4	---	---
Tapertip hawksbeard	CRAC2	---	---	---	---	1-2
Globeamallow	SPHAE	---	---	---	---	1-2
Phlox	PHLOX	---	---	---	---	1-2
Other perennial forbs	PPFF	2-8	2-8	---	2-8	---
Shadscale	ATCO	30-40	30-50	---	30-40	---
Bud sagebrush	ARSP5	20-30	5-15	---	20-30	---
Spiny hopsage	GRSP	2-5	---	5-15	2-5	5-15
Winterfat	EULA5	2-5	---	---	2-5	---
Black greasewood	SAVE4	---	15-30	20-30	---	---
Seepweed	SUAED	---	2-15	---	---	---
Basin big sagebrush	ARTRT*	---	---	5-15	---	---
Wyoming big sagebrush	ARTRW*	---	---	5-10	---	30-35
Other shrubs	SSSS	2-5	---	---	2-5	---

Range site symbol	024X002N	024X003N	024X022N	024X002N	024X020N
Potential production (lb/acre):					
Favorable years	700	600	800	700	700
Normal years	450	450	600	450	450
Unfavorable years	300	300	350	300	300

## 237--Broyles-Beoska-Orovada association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Broyles	Beoska	Orovada	1	2
Bottlebrush squirreltail	SIHY	5-15	5-15	5-10	2-10	5-15
Indian ricegrass	ORHY	5-15	5-15	20-30	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-10	2-5
Needleandthread	STCO4	1-3	1-3	10-20	---	1-3
Thurber needlegrass	STTH2	---	---	---	10-20	---
Tapertip hawksbeard	CRAC2	---	---	---	1-2	---
Globemallow	SPHAE	---	---	---	1-2	---
Phlox	PHLOX	---	---	---	1-2	---
Other perennial forbs	PPFF	2-8	2-8	2-5	---	2-8
Shadscale	ATCO	30-40	30-40	---	---	30-40
Bud sagebrush	ARSP5	20-30	20-30	---	---	20-30
Spiny hopsage	GRSP	2-5	2-5	---	5-15	2-5
Winterfat	EULA5	2-5	2-5	---	---	2-5
Wyoming big sagebrush	ARTRW*	---	---	15-20	30-35	---
Other shrubs	SSSS	2-5	2-5	5-15	---	2-5
Range site symbol						
		024X002N	024X002N	028B010N	024X020N	024X002N
Potential production (lb/acre):						
Favorable years		700	700	800	700	700
Normal years		450	450	600	450	450
Unfavorable years		300	300	400	300	300

## 239--Broyles-Tessfive-Perlors association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Broyles	Tessfive	Perlors	1	2	3
Bottlebrush squirreltail	SIHY	5-15	---	5-15	5-10	5-10	2-10
Indian ricegrass	ORHY	5-15	10-15	5-15	---	10-30	5-15
Sandberg bluegrass	POSE	2-5	---	2-5	---	---	2-10
Needleandthread	STC04	1-3	---	1-3	---	---	---
Thurber needlegrass	STTH2	---	10-15	---	---	---	10-20
Bluegrass	POA++	---	2-10	---	---	---	---
Other perennial grasses	PPGG	---	5-20	---	T-10	10-20	---
Globemallow	SPHAE	---	2-5	---	---	---	1-2
Tapertip hawksbeard	CRAC2	---	---	---	---	---	1-2
Phlox	PHLOX	---	---	---	---	---	1-2
Other perennial forbs	PPFF	2-8	---	2-8	2-8	5-15	---
Shadscale	ATC0	30-40	---	30-40	30-50	---	---
Bud sagebrush	ARSP5	20-30	---	20-30	5-15	---	---
Spiny hopsage	GRSP	2-5	---	2-5	---	1-5	5-15
Winterfat	EULA5	2-5	---	2-5	---	---	---
Black sagebrush	ARARN	---	25-35	---	---	5-15	---
Black greasewood	SAVE4	---	---	---	15-30	---	---
Seepweed	SUAED	---	---	---	2-15	---	---
Downy rabbitbrush	CHVIP	---	---	---	---	1-5	---
Antelope bitterbrush	PUTR2	---	---	---	---	1-5	---
Purple sage	SADOC2	---	---	---	---	T-5	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	10-25	30-35
Other shrubs	SSSS	2-5	5-35	2-5	---	2-4	---
Range site symbol							
		024X002N	024X030N	024X002N	024X003N	025X025N	024X020N
Potential production (lb/acre):							
Favorable years		700	500	700	600	200	700
Normal years		450	350	450	450	150	450
Unfavorable years		300	250	300	300	100	300

## 249--Bubus association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Bubus, slightly saline	Bubus	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-10	5-15	5-10	---
Indian ricegrass	ORHY	5-15	---	5-15	---	---
Sandberg bluegrass	POSE	2-5	---	2-5	---	---
Needleandthread	STCO4	1-3	---	1-3	---	---
Other perennial grasses	PPGG	---	T-10	---	T-10	---
Perennial forbs	PPFF	2-8	2-8	2-8	2-8	---
Shadscale	ATCO	30-40	30-50	30-40	30-50	---
Bud sagebrush	ARSP5	20-30	5-15	20-30	5-15	---
Spiny hopsage	GRSP	2-5	---	2-5	---	---
Winterfat	EULA5	2-5	---	2-5	---	---
Black greasewood	SAVE4	---	15-30	---	15-30	---
Seepweed	SUAED	---	2-15	---	2-15	---
Other shrubs	SSSS	2-5	---	2-5	---	---
Range site symbol		024X002N	024X003N	024X002N	024X003N	None
Potential production (lb/acre):						
Favorable years		700	600	700	600	---
Normal years		450	450	450	450	---
Unfavorable years		300	300	300	300	---

## 260--Umberland-Wendane association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Umberland	Wendane	1	2
Alkali sacaton	SPAI	40-70	15-30	---	5-10
Inland saltgrass	DISPS2	T-15	5-10	5-10	2-5
Basin wildrye	ELCI2	T-55	40-60	5-15	15-25
Other perennial grasses	PPGG	---	---	---	2-5
Perennial forbs	PPFF	2-8	---	T-5	2-5
Iodinebush	ALOC2	10-20	---	---	---
Saltbush	ATRIP	5-10	---	---	---
Black greasewood	SAVE4	2-5	5-15	60-75	5-15
Alkali rabbitbrush	CHAL9	---	1-2	---	---
Rubber rabbitbrush	CHNA2	---	1-2	---	---
Silver buffaloberry	SHAR	---	---	---	10-20
Other shrubs	SSSS	---	---	---	5-15

Range site symbol	024X010N	024X007N	024X011N	028B057N
Potential production (lb/acre):				
Favorable years	450	1,900	500	1,500
Normal years	300	1,400	350	1,000
Unfavorable years	150	800	200	600



## 261--Umberland-Wendane-Ocala association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Umberland	Wendane	Ocala	1	2
Alkali sacaton	SPAI	40-70	15-30	---	5-10	---
Inland saltgrass	DISPS2	T-15	5-10	5-10	2-5	---
Basin wildrye	ELCI2	T-5	40-60	5-15	15-25	---
Other perennial grasses	PPGG	---	---	---	2-5	---
Perennial forbs	PPFF	2-8	---	T-5	2-5	---
Iodinebush	ALOC2	10-20	---	---	---	---
Saltbush	ATRIP	5-10	---	---	---	---
Black greasewood	SAVE4	2-5	5-15	60-75	5-15	---
Alkali rabbitbrush	CHAL9	---	1-2	---	---	---
Rubber rabbitbrush	CHNA2	---	1-2	---	---	---
Silver buffaloberry	SHAR	---	---	---	10-20	---
Other shrubs	SSSS	---	---	---	5-15	---

Range site symbol	024X010N	024X007N	024X011N	028B057N	None
Potential production (lb/acre):					
Favorable years	450	1,900	500	1,500	---
Normal years	300	1,400	350	1,000	---
Unfavorable years	150	800	200	600	---

262--Umberland silt loam, frequently flooded, 0 to 2 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Umberland	1	2	3
Alkali sacaton	SPAI	30-40	15-30	---	5-10
Alkali muhly	MUAS	5-15	---	---	---
Alkali cordgrass	SPGR	5-10	---	---	---
Basin wildrye	ELCI2	---	40-60	50-60	15-25
Inland saltgrass	DISPS2	---	5-10	---	2-5
Western wheatgrass	AGSM	---	---	5-15	---
Other perennial grasses	PPGG	10-15	---	---	2-5
Perennial forbs	PPFF	5-10	---	2-8	2-5
Black greasewood	SAVE4	---	5-15	2-10	5-15
Alkali rabbitbrush	CHAL9	---	1-2	---	---
Rubber rabbitbrush	CHNA2	---	1-2	2-5	---
Basin big sagebrush	ARTRT*	---	---	15-20	---
Silver buffaloberry	SHAR	---	---	---	10-20
Other shrubs	SSSS	5-10	---	---	5-15

Range site symbol	028B002N	024X007N	024X006N	028B057N
Potential production (lb/acre):				
Favorable years	3,000	1,900	1,500	1,500
Normal years	1,500	1,400	1,100	1,000
Unfavorable years	700	800	600	600

## 270--Tomel-Laxal association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Tomel	Laxal	1	2
Galleta	HIJA	10-25	10-25	---	5-20
Indian ricegrass	ORHY	5-10	5-10	2-5	5-10
Bottlebrush squirreltail	SIHY	2-5	2-5	---	---
Desert needlegrass	STSP3	2-5	2-5	---	---
Basin wildrye	ELCI2	---	---	2-5	---
Needlegrass	STIPA	---	---	---	5-15
Other perennial grasses	PPGG	---	---	5-10	10-15
Perennial forbs	PPFF	4-10	4-10	5-10	3-8
Annual forbs	AAFF	---	---	---	2-5
Shadscale	ATCO	10-25	10-25	---	---
Bailey greasewood	SAVEB	5-15	5-15	---	---
Bud sagebrush	ARSP5	5-10	5-10	---	5-10
Winterfat	EULA5	5-10	5-10	---	2-5
Basin big sagebrush	ARTRT*	---	---	10-20	---
Rubber rabbitbrush	CHNA2	---	---	2-5	---
Nevada ephedra	EPNE	---	---	---	2-5
Other shrubs	SSSS	---	---	10-25	10-20
Range site symbol		029X017N	029X017N	029X009N	029X008N
Potential production (lb/acre):					
Favorable years		350	350	700	700
Normal years		250	250	500	400
Unfavorable years		100	100	200	200

## 280--Chiara-Filiran association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Chiara	Filiran	1	2	3
Indian ricegrass	ORHY	20-30	20-30	20-30	5-15	15-30
Needleandthread	STCO4	10-20	10-20	10-20	1-3	---
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	5-15	---
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	---
Thurber needlegrass	STTH2	---	---	---	---	5-10
Other perennial grasses	PPGG	---	---	---	---	5-15
Globemallow	SPHAE	---	---	---	---	2-4
Other perennial forbs	PPFF	2-5	2-5	2-5	2-8	---
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	---	15-30
Shadscale	ATCO	---	---	---	30-40	2-5
Bud sagebrush	ARSP5	---	---	---	20-30	---
Spiny hopsage	GRSP	---	---	---	2-5	2-5
Winterfat	EULA5	---	---	---	2-5	---
Other shrubs	SSSS	5-15	5-15	5-15	2-5	2-5
Range site symbol		028B010N	028B010N	028B010N	024X002N	024X045N
Potential production (lb/acre):						
Favorable years		800	800	800	700	350
Normal years		600	600	600	450	200
Unfavorable years		400	400	400	300	100

## 284--Chiara-Dewar association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Chiara	Dewar	1	2	3
Indian ricegrass	ORHY	20-30	20-30	20-30	5-15	20-30
Needleandthread	STCO4	10-20	10-20	10-20	5-10	10-20
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	2-5	5-10
Sandberg bluegrass	POSE	2-5	2-5	2-5	---	2-5
Other perennial grasses	PPGG	---	---	---	5-10	---
Perennial forbs	PPFF	2-5	2-5	2-5	5-10	2-5
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	---	15-20
Shadscale	ATCO	---	---	---	30-40	---
Bud sagebrush	ARSP5	---	---	---	5-10	---
Winterfat	EULA5	---	---	---	2-5	---
Fourwing saltbush	ATCA2	---	---	---	2-5	---
Other shrubs	SSSS	5-15	5-15	5-15	5-15	5-15
Range site symbol		028B010N	028B010N	028B010N	028B017N	028B010N
Potential production (lb/acre):						
Favorable years		800	800	800	700	800
Normal years		600	600	600	500	600
Unfavorable years		400	400	400	250	400

## 290--Creemon silt loam, 0 to 2 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Creemon	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	2-10
Indian ricegrass	ORHY	5-15	5-15	5-15	10-20
Sandberg bluegrass	POSE	2-5	2-5	2-5	---
Needleandthread	STCO4	1-3	1-3	1-3	---
Perennial forbs	PPFF	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-40	30-40	---
Bud sagebrush	ARSP5	20-30	20-30	20-30	2-5
Spiny hopsage	GRSP	2-5	2-5	2-5	---
Winterfat	EULA5	2-5	2-5	2-5	60-70
Other shrubs	SSSS	2-5	2-5	2-5	---

Range site symbol	024X002N	024X002N	024X002N	024X004N
Potential production (lb/acre):				
Favorable years	700	700	700	500
Normal years	450	450	450	350
Unfavorable years	300	300	300	200

## 291--Creemon-Wholan association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Creemon	Wholan	Wholan, alkaline	1	2	3
Bottlebrush squirreltail	SIHY	5-15	2-10	5-10	2-5	5-10	5-10
Indian ricegrass	ORHY	5-15	10-20	10-30	5-15	---	20-30
Sandberg bluegrass	POSE	2-5	---	---	---	---	2-5
Needleandthread	STCO4	1-3	---	---	5-10	---	10-20
Alkali sacaton	SPAI	---	---	T-5	---	---	---
Other perennial grasses	PPGG	---	---	---	5-10	T-10	---
Perennial forbs	PPFF	2-8	2-8	T-5	5-10	2-8	2-5
Shadscale	ATCO	30-40	---	---	30-40	30-50	---
Bud sagebrush	ARSP5	20-30	2-5	---	5-10	5-15	---
Spiny hopsage	GRSP	2-5	---	---	---	---	---
Winterfat	EULA5	2-5	60-70	---	2-5	---	---
Sickle saltbush	ATFA	---	---	50-65	---	---	---
Fourwing saltbush	ATCA2	---	---	---	2-5	---	---
Black greasewood	SAVE4	---	---	---	---	15-30	---
Seepweed	SUAED	---	---	---	---	2-15	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	---	15-20
Other shrubs	SSSS	2-5	---	---	5-15	---	5-15

Range site symbol	024X002N	024X004N	024X012N	028B017N	024X003N	028B010N
Potential production (lb/acre):						
Favorable years	700	500	700	700	600	800
Normal years	450	350	400	500	450	600
Unfavorable years	300	200	200	250	300	400

## 295--Creemon-Cren association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Creemon	Cren	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	---	5-10	2-5
Indian ricegrass	ORHY	5-15	5-15	---	---	2-10
Sandberg bluegrass	POSE	2-5	2-5	---	---	2-5
Needleandthread	STCO4	1-3	1-3	---	---	---
Basin wildrye	ELCI2	---	---	50-60	---	10-20
Western wheatgrass	AGSM	---	---	5-15	---	---
Other perennial grasses	PPGG	---	---	---	T-10	---
Perennial forbs	PPFF	2-8	2-8	2-8	2-8	---
Shadscale	ATCO	30-40	30-40	---	30-50	---
Bud sagebrush	ARSP5	20-30	20-30	---	5-15	---
Spiny hopsage	GRSP	2-5	2-5	---	---	15-30
Winterfat	EULA5	2-5	2-5	---	---	---
Basin big sagebrush	ARTRT*	---	---	15-20	---	15-25
Black greasewood	SAVE4	---	---	2-10	15-30	2-10
Rubber rabbitbrush	CHNA2	---	---	2-5	---	2-5
Seepweed	SUAED	---	---	---	2-15	---
Anderson peachbrush	PRAN2	---	---	---	---	2-10
Other shrubs	SSSS	2-5	2-5	---	---	---

Range site symbol	024X002N	024X002N	024X006N	024X003N	024X041N
Potential production (lb/acre):					
Favorable years	700	700	1,500	600	1,000
Normal years	450	450	1,100	450	800
Unfavorable years	300	300	600	300	600



## 296--Creemon-Hessing association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Creemon	Hessing	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	2-10	2-10	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-10	2-5	2-5
Needleandthread	STCO4	1-3	1-3	---	---	1-3
Thurber needlegrass	STTH2	---	---	10-20	---	---
Tapertip hawksbeard	CRAC2	---	---	1-2	---	---
Globemallow	SPHAE	---	---	1-2	1-4	---
Phlox	PHLOX	---	---	1-2	1-4	---
Other perennial forbs	PPFF	2-8	2-8	---	---	2-8
Shadscale	ATCO	30-40	30-40	---	2-5	30-40
Bud sagebrush	ARSP5	20-30	20-30	---	20-30	20-30
Spiny hopsage	GRSP	2-5	2-5	5-15	---	2-5
Winterfat	EULA5	2-5	2-5	---	20-40	2-5
Wyoming big sagebrush	ARTRW*	---	---	30-35	---	---
Other shrubs	SSSS	2-5	2-5	---	---	2-5
<hr/>						
Range site symbol		024X002N	024X002N	024X020N	024X014N	024X002N
Potential production (lb/acre):						
Favorable years		700	700	700	400	700
Normal years		450	450	450	300	450
Unfavorable years		300	300	300	200	300

## 297--Creemon-Rasille-Tulase association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Creemon	Rasille	Tulase	1	2	3
Bottlebrush squirreltail	SIHY	5-15	---	---	5-10	2-5	2-10
Indian ricegrass	ORHY	5-15	---	---	---	2-10	5-15
Sandberg bluegrass	POSE	2-5	---	---	---	2-5	2-10
Needleandthread	STCO4	1-3	---	---	---	---	---
Thurber needlegrass	STTH2	---	20-50	20-50	---	---	10-20
Bluebunch wheatgrass	AGSP	---	5-10	5-10	---	---	---
Basin wildrye	ELCI2	---	---	---	---	10-20	---
Other perennial grasses	PPGG	---	---	---	T-10	---	---
Balsamroot	BALSA	---	2-4	2-4	---	---	---
Tapertip hawksbeard	CRAC2	---	2-4	2-4	---	---	1-2
Globemallow	SPHAE	---	---	---	---	---	1-2
Phlox	PHLOX	---	---	---	---	---	1-2
Other perennial forbs	PPFF	2-8	---	---	2-8	---	---
Shadscale	ATCO	30-40	---	---	30-50	---	---
Bud sagebrush	ARSP5	20-30	---	---	5-15	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	---	15-30	5-15
Winterfat	EULA5	2-5	---	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	15-20	15-20	---	---	30-35
Downy rabbitbrush	CHVIP	---	2-5	2-5	---	---	---
Black greasewood	SAVE4	---	---	---	15-30	2-10	---
Seepweed	SUAED	---	---	---	2-15	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	15-25	---
Anderson peachbrush	PRAN2	---	---	---	---	2-10	---
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5	---
Other shrubs	SSSS	2-5	2-10	2-10	---	---	---

Range site symbol	024X002N	024X005N	024X005N	024X003N	024X041N	024X020N
Potential production (lb/acre):						
Favorable years	700	800	800	600	1,000	700
Normal years	450	600	600	450	800	450
Unfavorable years	300	400	400	300	600	300

## 298--Creemon-Misad association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name		Inclusion number--			
		Creemon	Misad	1	2	3	4
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	5-10	2-10	2-10
Indian ricegrass	ORHY	5-15	5-15	5-15	---	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	---	2-10	2-10
Needleandthread	STCO4	1-3	1-3	1-3	---	---	---
Thurber needlegrass	STTH2	---	---	---	---	10-20	10-20
Other perennial grasses	PPGG	---	---	---	T-10	---	---
Tapertip hawksbeard	CRAC2	---	---	---	---	1-2	1-2
Globemallow	SPHAE	---	---	---	---	1-2	1-2
Phlox	PHLOX	---	---	---	---	1-2	1-2
Other perennial forbs	PPFF	2-8	2-8	2-8	2-8	---	---
Shadscale	ATCO	30-40	30-40	30-40	30-50	---	---
Bud sagebrush	ARSP5	20-30	20-30	20-30	5-15	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	---	5-15	5-15
Winterfat	EULA5	2-5	2-5	2-5	---	---	---
Black greasewood	SAVE4	---	---	---	15-30	---	---
Seepweed	SUAED	---	---	---	2-15	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	30-35	30-35
Other shrubs	SSSS	2-5	2-5	2-5	---	---	---

Range site symbol	O24X002N	O24X002N	O24X002N	O24X003N	O24X020N	O24X020N
Potential production (lb/acre):						
Favorable years	700	700	700	600	700	700
Normal years	450	450	450	450	450	450
Unfavorable years	300	300	300	300	300	300

## 301--Cren-Ocala-Playas association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Cren	Ocala	Playas	1	2	3
Bottlebrush squirreltail	SIHY	5-10	---	---	---	5-10	---
Basin wildrye	ELCI2	---	5-15	---	40-60	---	---
Inland saltgrass	DISPS2	---	5-10	---	5-10	---	---
Alkali sacaton	SPAI	---	---	---	15-30	---	---
Indian ricegrass	ORHY	---	---	---	---	---	10-20
Needleandthread	STCO4	---	---	---	---	---	5-10
Other perennial grasses	PPGG	T-10	---	---	---	T-10	2-5
Perennial forbs	PPFF	2-8	T-5	---	---	2-8	2-5
Shadscale	ATCO	30-50	---	---	---	30-50	---
Black greasewood	SAVE4	15-30	60-75	---	5-15	15-30	10-40
Bud sagebrush	ARSP5	5-15	---	---	---	5-15	---
Seepweed	SUAED	2-15	---	---	---	2-15	---
Alkali rabbitbrush	CHAL9	---	---	---	1-2	---	---
Rubber rabbitbrush	CHNA2	---	---	---	1-2	---	---
Other shrubs	SSSS	---	---	---	---	---	5-20
Range site symbol		024X003N	024X011N	None	024X007N	024X003N	027X016N
Potential production (lb/acre):							
Favorable years		600	500	---	1,900	600	300
Normal years		450	350	---	1,400	450	200
Unfavorable years		300	200	---	800	300	50

## 310--Yobe-Kawich-Playas association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Yobe	Kawich	Playas	1	2
Basin wildrye	ELCI2	5-15	---	---	---	40-60
Inland saltgrass	DISPS2	5-10	---	---	---	5-10
Indian ricegrass	ORHY	---	10-20	---	---	---
Needleandthread	STCO4	---	5-10	---	---	---
Bottlebrush squirreltail	SIHY	---	---	---	5-10	---
Alkali sacaton	SPAI	---	---	---	---	15-30
Other perennial grasses	PPGG	---	2-5	---	T-10	---
Perennial forbs	PPFF	T-5	2-5	---	2-8	---
Black greasewood	SAVE4	60-75	10-40	---	15-30	5-15
Shadscale	ATCO	---	---	---	30-50	---
Bud sagebrush	ARSP5	---	---	---	5-15	---
Seepweed	SUAED	---	---	---	2-15	---
Alkali rabbitbrush	CHAL9	---	---	---	---	1-2
Rubber rabbitbrush	CHNA2	---	---	---	---	1-2
Other shrubs	SSSS	---	5-20	---	---	---

Range site symbol	024X011N	027X016N	None	024X003N	024X007N
Potential production (lb/acre):					
Favorable years	500	300	---	600	1,900
Normal years	350	200	---	450	1,400
Unfavorable years	200	50	---	300	800

## 320--Newpass-Jung association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Newpass	Jung	1	2	3
Pine bluegrass	POSC	5-15	---	---	---	5-15
Indian ricegrass	ORHY	5-15	---	2-5	---	5-15
Bottlebrush squirreltail	SIHY	5-10	---	2-10	---	5-10
Bluegrass	POA++	---	10-40	---	---	---
Thurber needlegrass	STTH2	---	2-10	---	---	---
Desert needlegrass	STSP3	---	---	2-10	---	---
Sandberg bluegrass	POSE	---	---	1-3	---	---
Other perennial grasses	PPGG	5-10	5-10	---	---	5-10
Perennial forbs	PPFF	5-10	5-10	2-8	---	5-10
Wyoming big sagebrush	ARTRW*	10-20	---	---	---	10-20
Spiny hopsage	GRSP	10-20	---	---	---	10-20
Nevada ephedra	EPNE	5-10	---	---	---	5-10
Black sagebrush	ARARN	---	20-30	---	---	---
Shadscale	ATCO	---	5-10	30-50	---	---
Bud sagebrush	ARSP5	---	---	15-30	---	---
Other shrubs	SSSS	---	5-10	---	---	---

Range site symbol	027X008N	027X032N	024X025N	None	027X008N
Potential production (lb/acre):					
Favorable years	700	600	250	---	700
Normal years	500	400	150	---	500
Unfavorable years	300	200	75	---	300

## 321--Newpass-Old Camp association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Newpass	Old Camp, strongly sloping	Old Camp, moderately steep	1	2
Pine bluegrass	POSC	5-15	20-30	20-30	---	---
Indian ricegrass	ORHY	5-15	---	---	---	---
Bottlebrush squirreltail	SIHY	5-10	---	---	---	---
Thurber needlegrass	STTH2	---	5-10	5-10	---	X
Basin wildrye	ELCI2	---	---	---	50-60	X
Western wheatgrass	AGSM	---	---	---	5-15	---
Bluebunch wheatgrass	AGSP	---	---	---	---	X
Nevada bluegrass	PONE3	---	---	---	---	X
Idaho fescue	FEID	---	---	---	---	X
Other perennial grasses	PPGG	5-10	5-15	5-15	---	---
Tapertip hawksbeard	CRAC2	---	---	---	---	X
Arrowleaf balsamroot	BASA3	---	---	---	---	X
Other perennial forbs	PPFF	5-10	5-10	5-10	2-8	---
Wyoming big sagebrush	ARTRW*	10-20	10-20	10-20	---	---
Spiny hopsage	GRSP	10-20	5-15	5-15	---	---
Nevada ephedra	EPNE	5-10	5-10	5-10	---	---
Basin big sagebrush	ARTRT*	---	---	---	15-20	---
Black greasewood	SAVE4	---	---	---	2-10	---
Rubber rabbitbrush	CHNA2	---	---	---	2-5	---
Big sagebrush	ARTR2	---	---	---	---	X
Snowberry	SYMPH	---	---	---	---	X
Currant	RIBES	---	---	---	---	X
Other shrubs	SSSS	---	5-10	5-10	---	---
Singleleaf pinyon	PIMO	---	---	---	---	X
Utah juniper	JUOS	---	---	---	---	X
Range site symbol		027X008N	027X007N	027X007N	024X006N	---
Woodland site symbol		---	---	---	---	025X062N
Potential production (lb/acre):						
Favorable years		700	600	600	1,500	500
Normal years		500	450	450	1,100	350
Unfavorable years		300	300	300	600	200

## 360--Eastwell-Blackhawk-Pineval association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Eastwell	Blackhawk	Pineval	1	2
Bluegrass	POA++	10-40	---	---	---	---
Thurber needlegrass	STTH2	2-10	---	---	---	---
Bottlebrush squirreltail	SIHY	---	5-15	5-10	5-10	5-10
Indian ricegrass	ORHY	---	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	---	2-5	---	---	---
Needleandthread	STCO4	---	1-3	---	---	---
Pine bluegrass	POSC	---	---	5-15	5-15	5-15
Other perennial grasses	PPGG	5-10	---	5-10	5-10	5-10
Perennial forbs	PPFF	5-10	2-8	5-10	5-10	5-10
Black sagebrush	ARARN	20-30	---	---	---	---
Shadscale	ATCO	5-10	30-40	---	---	---
Bud sagebrush	ARSP5	---	20-30	---	---	---
Spiny hopsage	GRSP	---	2-5	10-20	10-20	10-20
Winterfat	EULA5	---	2-5	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	10-20	10-20	10-20
Nevada ephedra	EPNE	---	---	5-10	5-10	5-10
Other shrubs	SSSS	5-10	2-5	---	---	---

Range site symbol	027X032N	024X002N	027X008N	027X008N	027X008N
Potential production (lb/acre):					
Favorable years	600	700	700	700	700
Normal years	400	450	500	500	500
Unfavorable years	200	300	300	300	300



## 404--Glean-Gando association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name		Inclusion number--			
		Glean	Gando	1	2	3	4
Idaho fescue	FEID	30-60	2-5	---	---	---	10-15
Bluebunch wheatgrass	AGSP	5-10	10-15	---	---	---	5-10
Cusick bluegrass	POCU3	5-10	---	---	---	---	---
Mountain brome	BRCA5	2-5	---	---	---	---	---
Sedge	CAREX	2-5	---	---	---	5-10	---
Indian ricegrass	ORHY	---	5-10	---	---	---	---
Thurber needlegrass	STTH2	---	2-5	---	---	---	---
Basin wildrye	ELCI2	---	---	---	30-50	---	---
Western wheatgrass	AGSM	---	---	---	5-10	---	---
Nevada bluegrass	PONE3	---	---	---	5-10	5-10	---
Tufted hairgrass	DECA5	---	---	---	---	30-60	---
Alpine timothy	PHAL2	---	---	---	---	5-10	---
Meadow barley	HOBR2	---	---	---	---	2-5	---
Pine bluegrass	POSC	---	---	---	---	---	5-10
Other perennial grasses	PPGG	---	5-10	---	5-15	2-10	10-15
Tapertip hawksbeard	CRAC2	1-3	---	---	---	---	---
Lupine	LUPIN	1-2	---	---	---	---	---
Sierra clover	TRWO	---	---	---	---	2-5	---
Cinquefoil	POTEN	---	---	---	---	2-5	---
Other perennial forbs	PPFF	---	5-10	---	5-10	10-20	5-10
Mountain big sagebrush	ARVA2	5-15	---	---	---	---	---
Snowberry	SYMPH	2-5	---	---	---	---	---
Low sagebrush	ARAR8	---	10-15	---	---	---	5-15
Black sagebrush	ARARN	---	10-15	---	---	---	5-15
Basin big sagebrush	ARTRT*	---	---	---	5-10	---	---
Rubber rabbitbrush	CHNA2	---	---	---	2-5	---	---
Willow	SALIX	---	---	---	---	2-5	---
Other shrubs	SSSS	---	5-10	---	5-10	2-5	5-10
<hr/>							
Range site symbol		024X023N	028B034N	None	028B024N	025X005N	028B038N
Potential production (lb/acre):							
Favorable years		1,500	600	---	2,800	2,000	800
Normal years		1,200	400	---	1,700	1,700	600
Unfavorable years		900	250	---	1,000	1,000	400

## 441--Gund-Umberland association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Gund	Umberland	1	2	3
Basin wildrye	ELCI2	50-60	---	15-20	40-60	---
Western wheatgrass	AGSM	5-15	---	---	---	---
Bottlebrush squirreltail	SIHY	---	5-10	2-10	---	---
Inland saltgrass	DISPS2	---	---	2-10	5-10	---
Alkali sacaton	SPAI	---	---	---	15-30	---
Other perennial grasses	PPGG	---	T-10	---	---	---
Perennial forbs	PPFF	2-8	2-8	2-8	---	---
Basin big sagebrush	ARTRT*	15-20	---	---	---	---
Black greasewood	SAVE4	2-10	15-30	40-60	5-15	---
Rubber rabbitbrush	CHNA2	2-5	---	---	1-2	---
Shadscale	ATCO	---	30-50	---	---	---
Bud sagebrush	ARSP5	---	5-15	---	---	---
Seepweed	SUAED	---	2-15	---	---	---
Alkali rabbitbrush	CHAL9	---	---	---	1-2	---

Range site symbol	024X006N	024X003N	024X008N	024X007N	None
Potential production (lb/acre):					
Favorable years	1,500	600	800	1,900	---
Normal years	1,100	450	600	1,400	---
Unfavorable years	600	300	400	800	---

## 442--Gund-Bubus-Wendane association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Gund	Bubus	Wendane	1	2	3
Basin wildrye	ELCI2	15-20	---	40-60	50-60	15-20	5-15
Bottlebrush squirreltail	SIHY	2-10	5-10	---	---	2-10	---
Inland saltgrass	DISPS2	2-10	---	5-10	---	2-10	5-10
Alkali sacaton	SPAI	---	---	15-30	---	---	---
Western wheatgrass	AGSM	---	---	---	5-15	---	---
Other perennial grasses	PPGG	---	T-10	---	---	---	---
Perennial forbs	PPFF	2-8	2-8	---	2-8	2-8	T-5
Black greasewood	SAVE4	40-60	15-30	5-15	2-10	40-60	60-75
Shadscale	ATCO	---	30-50	---	---	---	---
Bud sagebrush	ARSP5	---	5-15	---	---	---	---
Seepweed	SUAED	---	2-15	---	---	---	---
Alkali rabbitbrush	CHAL9	---	---	1-2	---	---	---
Rubber rabbitbrush	CHNA2	---	---	1-2	2-5	---	---
Basin big sagebrush	ARTRT*	---	---	---	15-20	---	---
<hr/>							
Range site symbol		024X008N	024X003N	024X007N	024X006N	024X008N	024X011N
Potential production (lb/acre):							
Favorable years		800	600	1,900	1,500	800	500
Normal years		600	450	1,400	1,100	600	350
Unfavorable years		400	300	800	600	400	200

## 443--Gund-Batan association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Gund	Batan	1	2	3
Basin wildrye	ELCI2	15-20	---	5-15	40-60	---
Bottlebrush squirreltail	SIHY	2-10	5-10	---	---	---
Inland saltgrass	DISPS2	2-10	---	5-10	5-10	10-25
Alkali sacaton	SPAI	---	---	---	15-30	---
Nuttall alkaligrass	PUAI	---	---	---	---	5-10
Baltic rush	JUBA	---	---	---	---	5-10
Other perennial grasses	PPGG	---	T-10	---	---	---
Cinquefoil	POTEN	---	---	---	---	5-10
Eriogonum	ERIOG	---	---	---	---	2-5
Other perennial forbs	PPFF	2-8	2-8	T-5	---	---
Black greasewood	SAVE4	40-60	15-30	60-75	5-15	T-5
Shadscale	ATCO	---	30-50	---	---	---
Bud sagebrush	ARSP5	---	5-15	---	---	---
Seepweed	SUAED	---	2-15	---	---	---
Alkali rabbitbrush	CHAL9	---	---	---	1-2	20-35
Rubber rabbitbrush	CHNA2	---	---	---	1-2	T-5

Range site symbol	024X008N	024X003N	024X011N	024X007N	024X044N
Potential production (lb/acre):					
Favorable years	800	600	500	1,900	350
Normal years	600	450	350	1,400	225
Unfavorable years	400	300	200	800	150

## 444--Gund association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Gund	Gund, drained	1	2	3
Basin wildrye	ELCI2	50-60	15-20	5-20	---	40-60
Western wheatgrass	AGSM	5-15	---	---	---	---
Bottlebrush squirreltail	SIHY	---	2-10	2-5	5-10	---
Inland saltgrass	DISPS2	---	2-10	---	---	5-10
Indian ricegrass	ORHY	---	---	2-5	20-30	---
Needleandthread	STCO4	---	---	---	10-20	---
Sandberg bluegrass	POSE	---	---	---	2-5	---
Alkali sacaton	SPAI	---	---	---	---	15-30
Thelypody	THELY	---	---	2-4	---	---
Other perennial forbs	PPFF	2-8	2-8	---	2-5	---
Basin big sagebrush	ARTRT*	15-20	---	5-15	---	---
Black greasewood	SAVE4	2-10	40-60	20-30	---	5-15
Rubber rabbitbrush	CHNA2	2-5	---	---	---	1-2
Wyoming big sagebrush	ARTRW*	---	---	5-10	15-20	---
Spiny hopsage	GRSP	---	---	5-15	---	---
Alkali rabbitbrush	CHAL9	---	---	---	---	1-2
Other shrubs	SSSS	---	---	---	5-15	---
<hr/>						
Range site symbol		024X006N	024X008N	024X022N	028B010N	024X007N
Potential production (lb/acre):						
Favorable years		1,500	800	800	800	1,900
Normal years		1,100	600	600	600	1,400
Unfavorable years		600	400	350	400	800

## 461--Hapgood-Packer-Layview association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Hapgood	Packer	Layview	1	2	3	4
Mountain brome	BRCA5	10-15	---	---	---	---	---	X
Slender wheatgrass	AGTR	20-30	---	---	2-5	---	---	X
Idaho fescue	FEID	5-15	10-20	10-20	---	---	25-50	X
Bluebunch wheatgrass	AGSP	5-10	---	---	---	---	15-30	X
Spike fescue	LEKI2	2-15	---	---	---	---	2-10	---
Bulbous oniongrass	MEBU	2-5	---	---	---	---	---	X
Nevada bluegrass	PONE3	2-5	---	---	---	---	---	X
Webber ricegrass	STWE	---	5-10	5-10	---	---	---	---
Bottlebrush squirreltail	SIHY	---	5-10	5-10	---	---	---	---
Cusick bluegrass	POCU3	---	2-5	2-5	---	---	---	---
Sandberg bluegrass	POSE	---	2-5	2-5	---	---	---	---
Pine bluegrass	POSC	---	2-5	2-5	---	---	---	---
Letterman needlegrass	STLE4	---	---	---	60-70	---	---	X
Columbia needlegrass	STNE3	---	---	---	2-5	---	---	X
Thurber needlegrass	STTH2	---	---	---	---	---	2-10	---
Sedge	CAREX	---	---	---	---	---	---	X
Blue wildrye	ELGL	---	---	---	---	---	---	X
Basin wildrye	ELCI2	---	---	---	---	---	---	X
Other perennial grasses	PPGG	---	---	---	2-5	---	---	---
Geranium	GERAN	2-5	---	---	---	---	---	---
Groundsel	SENEC	2-5	---	---	---	---	---	X
Lupine	LUPIN	2-5	---	---	---	---	---	---
Goldenweed	HAPLO2	---	2-5	2-5	---	---	---	---
Phlox	PHLOX	---	2-5	2-5	---	---	---	---
Tailcup lupine	LUCA	---	---	---	20-40	---	---	---
Balsamroot	BALSA	---	---	---	---	---	2-5	---
Horsemint	AGUR	---	---	---	---	---	---	X
Serviceberry	AMELA	5-10	---	---	---	---	---	X
Mountain big sagebrush	ARVA2	5-10	1-5	1-5	---	---	---	X
Snowberry	SYMPH	2-10	---	---	---	---	---	X
Low sagebrush	ARAR8	---	5-15	5-15	---	---	10-20	---
Black sagebrush	ARARN	---	5-15	5-15	---	---	---	---
Douglas rabbitbrush	CHVI8	---	---	---	---	---	2-5	---
Woods rose	ROWO	---	---	---	---	---	---	X
Currant	RIBES	---	---	---	---	---	---	X
Quaking aspen	POTR5	---	---	---	---	---	---	X

Range site symbol	024X032N	024X016N	024X016N	025X028N	None	024X027N	---
Woodland site symbol	---	---	---	---	---	---	025X065N
Potential production (lb/acre):							
Favorable years	2,200	350	350	1,000	---	1,200	800
Normal years	1,700	250	250	800	---	800	600
Unfavorable years	1,200	150	150	500	---	600	400

## 463--Hapgood-Packer-Rubble land association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Hapgood	Packer	Rubble land	1	2	3
Mountain brome	BRCA5	10-15	---	---	---	---	5-10
Slender wheatgrass	AGTR	20-30	---	---	---	---	2-5
Idaho fescue	FEID	5-15	10-20	---	10-20	25-50	5-15
Bluebunch wheatgrass	AGSP	5-10	---	---	---	15-30	5-15
Spike fescue	LEKI2	2-15	---	---	---	2-10	---
Bulbous oniongrass	MEBU	2-5	---	---	---	---	---
Nevada bluegrass	PONE3	2-5	---	---	---	---	2-5
Webber ricegrass	STWE	---	5-10	---	5-10	---	---
Bottlebrush squirreltail	SIHY	---	5-10	---	5-10	---	---
Cusick bluegrass	POCU3	---	2-5	---	2-5	---	2-5
Sandberg bluegrass	POSE	---	2-5	---	2-5	---	---
Pine bluegrass	POSC	---	2-5	---	2-5	---	---
Thurber needlegrass	STTH2	---	---	---	---	2-10	---
Letterman needlegrass	STLE4	---	---	---	---	---	2-5
Basin wildrye	ELCI2	---	---	---	---	---	2-5
Geranium	GERAN	2-5	---	---	---	---	---
Groundsel	SENEC	2-5	---	---	---	---	---
Lupine	LUPIN	2-5	---	---	---	---	---
Goldenweed	HAPLO2	---	2-5	---	2-5	---	---
Phlox	PHLOX	---	2-5	---	2-5	---	---
Balsamroot	BALSA	---	---	---	---	2-5	---
Other perennial forbs	PPFF	---	---	---	---	---	5-15
Serviceberry	AMELA	5-10	---	---	---	---	5-10
Mountain big sagebrush	ARVA2	5-10	1-5	---	1-5	---	5-10
Snowberry	SYMPH	2-10	---	---	---	---	2-10
Low sagebrush	ARAR8	---	5-15	---	5-15	10-20	---
Black sagebrush	ARARN	---	5-15	---	5-15	---	---
Douglas rabbitbrush	CHVI8	---	---	---	---	2-5	---
Oceanspray	HOLOD	---	---	---	---	---	5-10
Threetip sagebrush	ARTR4	---	---	---	---	---	2-10
Currant	RIBES	---	---	---	---	---	2-5

Range site symbol	024X032N	024X016N	None	024X016N	024X027N	024X034N
Potential production (lb/acre):						
Favorable years	2,200	350	---	350	1,200	1,600
Normal years	1,700	250	---	250	800	1,300
Unfavorable years	1,200	150	---	150	600	800

## 465--Hapgood-Halacan-Hatur association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Hapgood	Halacan	Hatur	1	2	3	4
Mountain brome	BRCA5	10-15	---	15-20	---	---	---	---
Slender wheatgrass	AGTR	20-30	---	---	---	---	---	---
Idaho fescue	FEID	5-15	10-20	10-15	30-60	---	---	---
Bluebunch wheatgrass	AGSP	5-10	---	---	2-10	---	---	---
Spike fescue	LEKI2	2-15	---	5-10	---	---	---	---
Bulbous oniongrass	MEBU	2-5	---	---	---	---	---	---
Nevada bluegrass	PONE3	2-5	---	---	---	---	5-15	---
Webber ricegrass	STONE	---	5-10	---	---	---	---	---
Bottlebrush squirreltail	SIHY	---	5-10	---	---	---	---	---
Cusick bluegrass	POCU3	---	2-5	---	5-10	---	---	---
Sandberg bluegrass	POSE	---	2-5	---	---	---	---	---
Pine bluegrass	POSC	---	2-5	---	---	---	---	---
Letterman needlegrass	STLE4	---	---	5-10	---	---	---	---
Basin wildrye	ELCI2	---	---	---	---	---	50-60	---
Mat muhly	MURI	---	---	---	---	---	2-10	---
Sedge	CAREX	---	---	---	---	---	1-5	---
Other perennial grasses	PPGG	---	---	5-15	---	---	15-20	---
Geranium	GERAN	2-5	---	---	---	---	---	---
Groundsel	SENEC	2-5	---	---	---	---	---	---
Lupine	LUPIN	2-5	---	---	---	---	---	---
Goldenweed	HAPLO2	---	2-5	---	---	---	---	---
Phlox	PHLOX	---	2-5	---	---	---	---	---
Tapertip hawkbeard	CRAC2	---	---	---	2-5	---	---	---
Other perennial forbs	PPFF	---	---	5-10	---	---	5-10	---
Serviceberry	AMELA	5-10	---	---	---	---	---	---
Mountain big sagebrush	ARVA2	5-10	1-5	10-20	---	---	---	---
Snowberry	SYMPH	2-10	---	5-10	---	---	---	---
Low sagebrush	ARAR8	---	5-15	---	---	---	---	---
Black sagebrush	ARARN	---	5-15	---	10-20	---	---	---
Utah serviceberry	AMUT	---	---	5-10	---	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	10-15	---
Other shrubs	SSSS	---	---	---	---	---	2-5	---
Range site symbol		024X032N	024X016N	028B029N	024X042N	None	025X003N	None
Potential production (lb/acre):								
Favorable years		2,200	350	1,500	1,000	---	2,500	---
Normal years		1,700	250	900	800	---	1,900	---
Unfavorable years		1,200	150	650	500	---	1,200	---



## 491--Enko-Orovada association, gently sloping

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Enko	Orovada	1	2
Indian ricegrass	ORHY	20-30	20-30	20-30	20-30
Needleandthread	STCO4	10-20	10-20	10-20	10-20
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	5-10
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5
Perennial forbs	PPFF	2-5	2-5	2-5	2-5
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	15-20
Other shrubs	SSSS	5-15	5-15	5-15	5-15
Range site symbol		028B010N	028B010N	028B010N	028B010N
Potential production (lb/acre):					
Favorable years		800	800	800	800
Normal years		600	600	600	600
Unfavorable years		400	400	400	400

## 492--Enko-Glyphs association

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Enko	Glyphs	1	2
Indian ricegrass	ORHY	20-30	20-30	20-30	20-30
Needleandthread	STCO4	10-20	10-20	10-20	10-20
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	5-10
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5
Perennial forbs	PPFF	2-5	2-5	2-5	2-5
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	15-20
Other shrubs	SSSS	5-15	5-15	5-15	5-15
Range site symbol		028B010N	028B010N	028B010N	028B010N
Potential production (lb/acre):					
Favorable years		800	800	800	800
Normal years		600	600	600	600
Unfavorable years		400	400	400	400

## 493--Enko-Orovada association, nearly level

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Enko	Orovada	1	2	3
Indian ricegrass	ORHY	20-30	20-30	20-30	2-5	---
Needleandthread	STCO4	10-20	10-20	10-20	2-5	---
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	2-5	---
Sandberg bluegrass	POSE	2-5	2-5	2-5	---	---
Basin wildrye	ELCI2	---	---	---	10-20	30-50
Nevada bluegrass	PONE3	---	---	---	---	2-5
Western wheatgrass	AGSM	---	---	---	---	2-5
Other perennial grasses	PPGG	---	---	---	5-10	15-25
Perennial forbs	PPFF	2-5	2-5	2-5	5-10	2-5
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	---	---
Basin big sagebrush	ARTRT*	---	---	---	10-15	5-10
Greene rabbitbrush	CHGR6	---	---	---	2-5	---
Nevada ephedra	EPNE	---	---	---	2-5	---
Fourwing saltbush	ATCA2	---	---	---	2-5	---
Other shrubs	SSSS	5-15	5-15	5-15	5-10	5-10
Range site symbol		O28B010N	O28B010N	O28B010N	O28B009N	O28B003N
Potential production (lb/acre):						
Favorable years		800	800	800	700	2,600
Normal years		600	600	600	400	1,250
Unfavorable years		400	400	400	300	800

## 512--Hessing-Relley association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Hessing	Relley	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-10	5-15	5-15	---
Indian ricegrass	ORHY	5-15	10-30	5-15	5-15	---
Sandberg bluegrass	POSE	2-5	---	2-5	2-5	---
Needleandthread	STCO4	1-3	---	1-3	1-3	---
Alkali sacaton	SPAI	---	T-5	---	---	---
Basin wildrye	ELCI2	---	---	---	---	50-60
Western wheatgrass	AGSM	---	---	---	---	5-15
Other perennial forbs	PPFF	2-8	T-5	2-8	2-8	2-8
Shadscale	ATCO	30-40	---	30-40	30-40	---
Bud sagebrush	ARSP5	20-30	---	20-30	20-30	---
Spiny hopsage	GRSP	2-5	---	2-5	2-5	---
Winterfat	EULA5	2-5	---	2-5	2-5	---
Sickle saltbush	ATFR	---	50-65	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	15-20
Black greasewood	SAVE4	---	---	---	---	2-10
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5
Other shrubs	SSSS	2-5	---	2-5	2-5	---

Range site symbol	024X002N	024X012N	024X002N	024X002N	024X006N
Potential production (lb/acre):					
Favorable years	700	700	700	700	1,500
Normal years	450	400	450	450	1,100
Unfavorable years	300	200	300	300	600

## 560--Jesse Camp silt loam

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Jesse Camp	1	2	3
Basin wildrye	ELCI2	30-50	---	---	10-20
Nevada bluegrass	PONE3	2-5	---	---	---
Western wheatgrass	AGSM	2-5	---	---	---
Indian ricegrass	ORHY	---	20-30	5-15	2-5
Needleandthread	STCO4	---	10-20	5-10	2-5
Bottlebrush squirreltail	SIHY	---	5-10	2-5	2-5
Sandberg bluegrass	POSE	---	2-5	---	---
Other perennial grasses	PPGG	15-25	---	5-10	5-10
Perennial forbs	PPFF	2-5	2-5	5-10	5-10
Basin big sagebrush	ARTRT*	5-10	---	---	10-15
Wyoming big sagebrush	ARTRW*	---	15-20	---	---
Shadscale	ATCO	---	---	30-40	---
Bud sagebrush	ARSP5	---	---	5-10	---
Winterfat	EULA5	---	---	2-5	---
Fourwing saltbush	ATCA2	---	---	2-5	2-5
Greene rabbitbrush	CHGR6	---	---	---	2-5
Nevada ephedra	EPNE	---	---	---	2-5
Other shrubs	SSSS	5-10	5-15	5-15	5-10
Range site symbol		028B003N	028B010N	028B017N	028B009N
Potential production (lb/acre):					
Favorable years		2,600	800	700	700
Normal years		1,250	600	500	400
Unfavorable years		800	400	250	300

## 621--Loncan-Gando-Glean association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Loncan	Gando	Glean	1	2	3	4
Bluebunch wheatgrass	AGSP	10-20	---	10-20	---	---	---	---
Thurber needlegrass	STTH2	5-10	---	5-10	---	---	---	---
Basin wildrye	ELCI2	2-5	---	2-5	---	50-60	---	---
Pine bluegrass	POSC	2-5	2-5	2-5	---	---	---	---
Idaho fescue	FEID	---	10-20	---	---	---	5-10	---
Webber ricegrass	STWE	---	5-10	---	---	---	---	---
Bottlebrush squirreltail	SIHY	---	5-10	---	---	---	---	---
Cusick bluegrass	POCU3	---	2-5	---	---	---	---	---
Sandberg bluegrass	POSE	---	2-5	---	---	---	---	---
Nevada bluegrass	PONE3	---	---	---	---	5-15	---	5-10
Mat muhly	MURI	---	---	---	---	2-10	---	---
Sedge	CAREX	---	---	---	---	1-5	---	5-10
Mountain brome	BRCA5	---	---	---	---	---	2-5	---
Tufted hairgrass	DECA5	---	---	---	---	---	---	30-60
Alpine timothy	PHAL2	---	---	---	---	---	---	5-10
Meadow barley	HOBR2	---	---	---	---	---	---	2-5
Other perennial grasses	PPGG	10-20	---	10-20	---	15-20	5-15	2-10
Goldenweed	HAPLO2	---	2-5	---	---	---	---	---
Phlox	PHLOX	---	2-5	---	---	---	---	---
Sierra clover	TRWO	---	---	---	---	---	---	2-5
Cinquefoil	POTEN	---	---	---	---	---	---	2-5
Other perennial forbs	PFFF	5-12	---	5-12	---	5-10	5-15	10-20
Mountain big sagebrush	ARVA2	15-25	1-5	15-25	---	---	---	---
Antelope bitterbrush	PUTR2	5-10	---	5-10	---	---	---	---
Utah serviceberry	AMUT	2-10	---	2-10	---	---	2-5	---
Low sagebrush	ARAR8	---	5-15	---	---	---	---	---
Black sagebrush	ARARN	---	5-15	---	---	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	10-15	---	---
Common chokecherry	PRVI	---	---	---	---	---	20-30	---
Snowberry	SYMPH	---	---	---	---	---	5-10	---
Willow	SALIX	---	---	---	---	---	---	2-5
Other shrubs	SSSS	5-15	---	5-15	---	2-5	5-15	2-5

Range site symbol	028B030N	024X016N	028B030N	None	025X003N	028B026N	025X005N
Potential production (lb/acre):							
Favorable years	1,100	350	1,100	---	2,500	1,400	2,000
Normal years	850	250	850	---	1,900	1,000	1,700
Unfavorable years	550	150	550	---	1,200	700	1,000

## 632--McConnel-Orovada-Misad association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		McConnel	Orovada	Misad	1	2	3
Thurber needlegrass	STTH2	20-50	---	---	---	---	---
Bluebunch wheatgrass	AGSP	5-10	---	---	---	---	---
Indian ricegrass	ORHY	---	20-30	5-15	2-5	---	10-20
Needleandthread	STCO4	---	10-20	1-3	---	---	---
Bottlebrush squirreltail	SIHY	---	5-10	5-15	2-5	5-10	2-10
Sandberg bluegrass	POSE	---	2-5	2-5	---	---	---
Basin wildrye	ELCI2	---	---	---	5-20	---	---
Other perennial grasses	PPGG	---	---	---	---	T-10	---
Balsamroot	BALSA	2-4	---	---	---	---	---
Tapertip hawksbeard	CRAC2	2-4	---	---	---	---	---
Thelypody	THELY	---	---	---	2-4	---	---
Other perennial forbs	PPFF	---	2-5	2-8	---	2-8	2-8
Wyoming big sagebrush	ARTRW*	15-20	15-20	---	5-10	---	---
Downy rabbitbrush	CHVIP	2-5	---	---	---	---	---
Spiny hopsage	GRSP	2-5	---	2-5	5-15	---	---
Shadscale	ATCO	---	---	30-40	---	30-50	---
Bud sagebrush	ARSP5	---	---	20-30	---	5-15	2-5
Winterfat	EULA5	---	---	2-5	---	---	60-70
Black greasewood	SAVE4	---	---	---	20-30	15-30	---
Basin big sagebrush	ARTRT*	---	---	---	5-15	---	---
Seepweed	SUAED	---	---	---	---	2-15	---
Other shrubs	SSSS	2-10	5-15	2-5	---	---	---
<hr/>							
Range site symbol		024X005N	028B010N	024X002N	024X022N	024X003N	024X004N
Potential production (lb/acre):							
Favorable years		800	800	700	800	600	500
Normal years		600	600	450	600	450	350
Unfavorable years		400	400	300	350	300	200

## 633--McConnel-Rasille-Wholan association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		McConnel	Rasille	Wholan	1	2	3
Thurber needlegrass	STH2	20-50	---	---	---	---	---
Bluebunch wheatgrass	AGSP	5-10	---	---	---	---	---
Indian ricegrass	ORHY	---	20-30	10-20	20-30	15-25	---
Needleandthread	STCO4	---	10-20	---	10-20	---	---
Bottlebrush squirreltail	SIHY	---	5-10	2-10	5-10	2-5	---
Sandberg bluegrass	POSE	---	2-5	---	2-5	---	---
Basin wildrye	ELC12	---	---	---	---	---	50-60
Western wheatgrass	AGSM	---	---	---	---	---	5-15
Other perennial grasses	PPGG	---	---	---	---	5-10	---
Balsamroot	BALSA	2-4	---	---	---	---	---
Tapertip hawksbeard	CRAC2	2-4	---	---	---	---	---
Other perennial forbs	PPFF	---	2-5	2-8	2-5	5-10	2-8
Wyoming big sagebrush	ARTRW*	15-20	15-20	---	15-20	---	---
Downy rabbitbrush	CHVIP	2-5	---	---	---	---	---
Spiny hopsage	GRSP	2-5	---	---	---	---	---
Winterfat	EULA5	---	---	60-70	---	30-45	---
Bud sagebrush	ARSP5	---	---	2-5	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	15-20
Black greasewood	SAVE4	---	---	---	---	---	2-10
Rubber rabbitbrush	CHNA2	---	---	---	---	---	2-5
Other shrubs	SSSS	2-10	5-15	---	5-15	5-15	---

Range site symbol	024X005N	028B010N	024X004N	028B010N	028B013N	024X006N
Potential production (lb/acre):						
Favorable years	800	800	500	800	800	1,500
Normal years	600	600	350	600	550	1,100
Unfavorable years	400	400	200	400	300	600



## 635--McConnel-Rasille association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		McConnel	Rasille	1	2	3
Thurber needlegrass	STTH2	20-50	---	---	---	---
Bluebunch wheatgrass	AGSP	5-10	---	---	---	---
Indian ricegrass	ORHY	---	20-30	20-30	20-30	10-30
Needleandthread	STCO4	---	10-20	10-20	10-20	---
Bottlebrush squirreltail	SIHY	---	5-10	5-10	5-10	5-10
Sandberg bluegrass	POSE	---	2-5	2-5	2-5	---
Alkali sacaton	SPAI	---	---	---	---	1-5
Other perennial grasses	PPGG	---	---	---	---	5-10
Balsamroot	BALSA	2-4	---	---	---	---
Tapertip hawksbeard	CRAC2	2-4	---	---	---	---
Other perennial forbs	PPFF	---	2-5	2-5	2-5	1-5
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	15-20	---
Downy rabbitbrush	CHVIP	2-5	---	---	---	---
Spiny hopsage	GRSP	2-5	---	---	---	---
Sickle saltbush	ATFA	---	---	---	---	50-65
Other shrubs	SSSS	2-10	5-15	5-15	5-15	---
Range site symbol		024X005N	028B010N	028B010N	028B010N	024X012N
Potential production (lb/acre):						
Favorable years		800	800	800	800	700
Normal years		600	600	600	600	400
Unfavorable years		400	400	400	400	200

## 636--McConnel-Defler-Rasille association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		McConnel	Defler	Rasille	1	2	3
Thurber needlegrass	STTH2	20-50	---	---	---	---	---
Bluebunch wheatgrass	AGSP	5-10	---	---	---	---	---
Indian ricegrass	ORHY	---	10-20	20-30	10-20	20-30	5-15
Bottlebrush squirreltail	SIHY	---	2-10	5-10	2-10	5-10	5-15
Needleandthread	STCO4	---	---	10-20	---	10-20	1-3
Sandberg bluegrass	POSE	---	---	2-5	---	2-5	2-5
Balsamroot	BALSA	2-4	---	---	---	---	---
Tapertip hawksbeard	CRAC2	2-4	---	---	---	---	---
Other perennial forbs	PPFF	---	2-8	2-5	2-8	2-5	2-8
Wyoming big sagebrush	ARTRW*	15-20	---	15-20	---	15-20	---
Downy rabbitbrush	CHVIP	2-5	---	---	---	---	---
Spiny hopsage	GRSP	2-5	---	---	---	---	2-5
Winterfat	EULA5	---	60-70	---	60-70	---	2-5
Bud sagebrush	ARSP5	---	2-5	---	2-5	---	20-30
Shadscale	ATCO	---	---	---	---	---	30-40
Other shrubs	SSSS	2-10	---	5-15	---	5-15	2-5
<hr/>							
Range site symbol		024X005N	024X004N	028B010N	024X004N	028B010N	024X002N
Potential production (lb/acre):							
Favorable years		800	500	800	500	800	700
Normal years		600	350	600	350	600	450
Unfavorable years		400	200	400	200	400	300

## 637--McConnel-Orovada association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		McConnel	Orovada	McConnel, gravelly	1	2	3
Indian ricegrass	ORHY	20-30	20-30	20-30	5-15	20-30	15-25
Needleandthread	STCO4	10-20	10-20	10-20	5-10	10-20	---
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	2-5	5-10	2-5
Sandberg bluegrass	POSE	2-5	2-5	2-5	---	2-5	---
Other perennial grasses	PPGG	---	---	---	5-10	---	5-10
Perennial forbs	PPFF	2-5	2-5	2-5	5-10	2-5	5-10
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	---	15-20	---
Shadscale	ATCO	---	---	---	30-40	---	---
Bud sagebrush	ARSP5	---	---	---	5-10	---	---
Winterfat	EULA5	---	---	---	2-5	---	30-45
Fourwing saltbush	ATCA2	---	---	---	2-5	---	---
Other shrubs	SSSS	5-15	5-15	5-15	5-15	5-15	5-15
<hr/>							
Range site symbol		028B010N	028B010N	028B010N	028B017N	028B010N	028B013N
Potential production (lb/acre):							
Favorable years		800	800	800	700	800	800
Normal years		600	600	600	500	600	550
Unfavorable years		400	400	400	250	400	300

## 638--McConnel-Wholan association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name		Inclusion number--
		McConnel	Wholan	1
Indian ricegrass	ORHY	20-30	15-25	20-30
Needleandthread	STCO4	10-20	---	10-20
Bottlebrush squirreltail	SIHY	5-10	2-5	5-10
Sandberg bluegrass	POSE	2-5	---	2-5
Other perennial grasses	PPGG	---	5-10	---
Perennial forbs	PPFF	2-5	5-10	2-5
Wyoming big sagebrush	ARTRW*	15-20	---	15-20
Winterfat	EULA5	---	30-45	---
Other shrubs	SSSS	5-15	5-15	5-15

Range site symbol	028B010N	028B013N	028B010N
Potential production (lb/acre):			
Favorable years	800	800	800
Normal years	600	550	600
Unfavorable years	400	300	400

## 670--Filiran-Pineval-Kingingham association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Filiran	Pineval	Kingingham	1	2
Indian ricegrass	ORHY	20-30	20-30	5-15	20-30	20-30
Needleandthread	STCO4	10-20	10-20	1-3	10-20	10-20
Bottlebrush squirreltail	SIHY	5-10	5-10	5-15	5-10	5-10
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	2-5
Perennial forbs	PPFF	2-5	2-5	2-8	2-5	2-5
Wyoming big sagebrush	ARTRW*	15-20	15-20	---	15-20	15-20
Shadscale	ATCO	---	---	30-40	---	---
Bud sagebrush	ARSP5	---	---	20-30	---	---
Spiny hopsage	GRSP	---	---	2-5	---	---
Winterfat	EULA5	---	---	2-5	---	---
Other shrubs	SSSS	5-15	5-15	2-5	5-15	5-15

Range site symbol	028B010N	028B010N	024X002N	028B010N	028B010N
Potential production (lb/acre):					
Favorable years	800	800	700	800	800
Normal years	600	600	450	600	600
Unfavorable years	400	400	300	400	400

## 674--Filiran-Buffaran association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Filiran	Buffaran	1	2	3
Indian ricegrass	ORHY	20-30	20-30	20-30	20-30	5-15
Needleandthread	STCO4	10-20	10-20	10-20	10-20	1-3
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	5-10	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	2-5
Perennial forbs	PPFF	2-5	2-5	2-5	2-5	2-8
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	15-20	---
Shadscale	ATCO	---	---	---	---	30-40
Bud sagebrush	ARSP5	---	---	---	---	20-30
Spiny hopsage	GRSP	---	---	---	---	2-5
Winterfat	EULA5	---	---	---	---	2-5
Other shrubs	SSSS	5-15	5-15	5-15	5-15	2-5
<hr/>						
Range site symbol		028B010N	028B010N	028B010N	028B010N	024X002N
Potential production (lb/acre):						
Favorable years		800	800	800	800	700
Normal years		600	600	600	600	450
Unfavorable years		400	400	400	400	300

## 675--Filiran-Buffaran-Orovada associaton

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Filiran	Buffaran	Orovada	1	2
Indian ricegrass	ORHY	20-30	20-30	20-30	20-30	20-30
Needleandthread	STCO4	10-20	10-20	10-20	10-20	10-20
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	5-10	5-10
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	2-5
Perennial forbs	PPFF	2-5	2-5	2-5	2-5	2-5
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	15-20	15-20
Other shrubs	SSSS	5-15	5-15	5-15	5-15	5-15

Range site symbol	028B010N	028B010N	028B010N	028B010N	028B010N
Potential production (lb/acre):					
Favorable years	800	800	800	800	800
Normal years	600	600	600	600	600
Unfavorable years	400	400	400	400	400

## 680--Skullwak-Umberland-Wendane association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Skullwak	Umberland	Wendane	1	2	3
Inland saltgrass	DISPS2	10-25	5-10	5-10	---	---	---
Nuttall alkaligrass	PUIAI	5-10	---	---	---	---	---
Baltic rush	JUBA	5-10	---	---	---	---	---
Basin wildrye	ELCI2	---	5-15	40-60	---	---	---
Alkali sacaton	SPAI	---	---	15-30	---	---	---
Bottlebrush squirreltail	SIHY	---	---	---	---	5-10	---
Other perennial grasses	PPGG	---	---	---	---	T-10	---
Cinquefoil	POTEN	5-10	---	---	---	---	---
Eriogonum	ERIOG	2-5	---	---	---	---	---
Other perennial forbs	PPFF	---	T-5	---	---	2-8	---
Alkali rabbitbrush	CHAL9	20-35	---	1-2	---	---	---
Black greasewood	SAVE4	T-5	60-75	5-15	---	15-30	---
Rubber rabbitbrush	CHNA2	T-5	---	1-2	---	---	---
Shadscale	ATCO	---	---	---	---	30-50	---
Bud sagebrush	ARSP5	---	---	---	---	5-15	---
Seepweed	SUAED	---	---	---	---	2-15	---

Range site symbol	024X044N	024X011N	024X007N	None	024X003N	None
Potential production (lb/acre):						
Favorable years	350	500	1,900	---	600	---
Normal years	225	350	1,400	---	450	---
Unfavorable years	150	200	800	---	300	---



## 683--Ocala-Sonoma-Paranat association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Ocala	Sonoma	Paranat	1	2	3
Basin wildrye	ELCI2	40-60	2-5	2-5	50-60	T-5	5-20
Alkali sacaton	SPAI	15-30	15-40	15-40	---	40-70	---
Inland saltgrass	DISPS2	5-10	5-10	5-10	---	T-15	---
Alkali muhly	MUAS	---	10-20	10-20	---	---	---
Alkali bluegrass	POJU	---	5-15	5-15	---	---	---
Alkali cordgrass	SPGR	---	5-10	5-10	---	---	---
Western wheatgrass	AGSM	---	---	---	5-15	---	---
Bottlebrush squirreltail	SIHY	---	---	---	---	---	2-5
Indian ricegrass	ORHY	---	---	---	---	---	2-5
Arrowgrass	TRIGL	---	1-3	1-3	---	---	---
Thelypody	THELY	---	---	---	---	---	2-4
Other perennial forbs	PPFF	---	---	---	2-8	2-8	---
Black greasewood	SAVE4	5-15	T-2	T-2	2-10	2-5	20-30
Alkali rabbitbrush	CHAL9	1-2	---	---	---	---	---
Rubber rabbitbrush	CHNA2	1-2	T-2	T-2	2-5	---	---
Silver buffaloberry	SHAR	---	T-2	T-2	---	---	---
Willow	SALIX	---	T-2	T-2	---	---	---
Woods rose	ROWO	---	T-2	T-2	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	15-20	---	5-15
Iodinebush	ALOC2	---	---	---	---	10-20	---
Saltbush	ATRIP	---	---	---	---	5-10	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	---	5-10
Spiny hopsage	GRSP	---	---	---	---	---	5-15
<hr/>							
Range site symbol		024X007N	024X009N	024X009N	024X006N	024X010N	024X022N
Potential production (lb/acre):							
Favorable years		1,900	1,500	1,500	1,500	450	800
Normal years		1,400	1,000	1,000	1,100	300	600
Unfavorable years		800	700	700	600	150	350

## 700--Orovada-Rasille-Wholan association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Orovada	Rasille	Wholan	1	2	3	4
Indian ricegrass	ORHY	20-30	20-30	10-20	5-15	---	20-30	---
Needleandthread	STCO4	10-20	10-20	---	1-3	---	10-20	---
Bottlebrush squirreltail	SIHY	5-10	5-10	2-10	5-15	---	5-10	---
Sandberg bluegrass	POSE	2-5	2-5	---	2-5	---	2-6	---
Basin wildrye	ELCI2	---	---	---	---	50-60	---	30-50
Western wheatgrass	AGSM	---	---	---	---	5-15	---	2-5
Nevada bluegrass	PONE3	---	---	---	---	---	---	2-5
Other perennial grasses	PPGG	---	---	---	---	---	---	15-25
Perennial forbs	PPFF	2-5	2-5	2-5	2-8	2-8	2-5	2-5
Wyoming big sagebrush	ARTRW*	15-20	15-20	---	---	---	15-20	---
Winterfat	EULA5	---	---	60-70	2-5	---	---	---
Bud sagebrush	ARSP5	---	---	2-5	20-30	---	---	---
Shadscale	ATCO	---	---	---	30-40	---	---	---
Spiny hopsage	GRSP	---	---	---	2-5	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	15-20	---	---
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5	---	---
Other shrubs	SSSS	5-15	5-15	---	2-5	---	5-15	5-10
Range site symbol								
		028B010N	028B010N	024X004N	024X002N	024X006N	028B010N	028B003N
Potential production (lb/acre):								
Favorable years		800	800	500	700	1,500	800	2,600
Normal years		600	600	350	450	1,100	600	1,250
Unfavorable years		400	400	200	300	600	400	800

## 701--Orovada fine sandy loam, 2 to 4 percent slopes

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Orovada	1	2	3
Indian ricegrass	ORHY	20-30	5-15	5-15	10-20
Needleandthread	STCO4	10-20	1-3	1-3	20-30
Bottlebrush squirreltail	SIHY	5-10	5-15	5-15	2-5
Sandberg bluegrass	POSE	2-5	2-5	2-5	---
Thickspike wheatgrass	AGDA	---	---	---	2-10
Other perennial grasses	PPGG	---	---	---	2-5
Perennial forbs	PPFF	2-5	2-8	2-8	10-20
Wyoming big sagebrush	ARTRW*	15-20	---	---	---
Shadscale	ATCO	---	30-40	30-40	---
Bud sagebrush	ARSP5	---	20-30	20-30	---
Spiny hopsage	GRSP	---	2-5	2-5	T-5
Winterfat	EULA5	---	2-5	2-5	---
Big sagebrush	ARTR2	---	---	---	10-20
Other shrubs	SSSS	5-15	2-5	2-5	2-10
Range site symbol		O28B010N	O24X002N	O24X002N	O24X017N
Potential production (lb/acre):					
Favorable years		800	700	700	900
Normal years		600	450	450	700
Unfavorable years		400	300	300	500

## 702--Orovada-Creemon association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Orovada	Creemon	1	2	3
Indian ricegrass	ORHY	20-30	---	---	5-15	5-15
Needleandthread	STCO4	10-20	---	---	5-10	1-3
Bottlebrush squirreltail	SIHY	5-10	5-10	---	2-5	5-15
Sandberg bluegrass	POSE	2-5	---	---	---	2-5
Basin wildrye	ELCI2	---	---	50-60	---	---
Western wheatgrass	AGSM	---	---	5-15	---	---
Sand dropseed	SPCR	---	---	---	2-5	---
Other perennial grasses	PPGG	---	T-10	---	5-10	---
Perennial forbs	PPFF	2-5	2-8	2-8	5-15	2-8
Wyoming big sagebrush	ARTRW*	15-20	---	---	---	---
Shadscale	ATCO	---	30-50	---	---	30-40
Black greasewood	SAVE4	---	15-30	2-10	---	---
Bud sagebrush	ARSP5	---	5-15	---	2-5	20-30
Seepweed	SUAED	---	2-15	---	---	---
Basin big sagebrush	ARTRT*	---	---	15-20	---	---
Rubber rabbitbrush	CHNA2	---	---	2-5	---	---
Fourwing saltbush	ATCA2	---	---	---	10-20	---
Winterfat	EULA5	---	---	---	10-15	2-5
Nevada ephedra	EPNE	---	---	---	2-5	---
Spiny hopsage	GRSP	---	---	---	---	2-5
Other shrubs	SSSS	5-15	---	---	10-15	2-5
<hr/>						
Range site symbol		028B010N	024X003N	024X006N	028B014N	024X002N
Potential production (lb/acre):						
Favorable years		800	600	1,500	450	700
Normal years		600	450	1,100	300	450
Unfavorable years		400	300	600	125	300

## 703--Orovada fine sandy loam, 0 to 2 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Orovada	1	2	3
Indian ricegrass	ORHY	20-30	15-25	2-5	---
Needleandthread	STCO4	10-20	---	2-5	---
Bottlebrush squirreltail	SIHY	5-10	2-5	2-5	---
Sandberg bluegrass	POSE	2-5	---	---	---
Thurber needlegrass	STTH2	---	5-10	---	---
Basin wildrye	ELCI2	---	---	10-20	50-60
Western wheatgrass	AGSM	---	---	---	5-15
Other perennial grasses	PPGG	---	---	5-10	---
Scarlet globemallow	SPCO	---	2-5	---	---
Other perennial forbs	PPFF	2-5	---	5-10	2-8
Wyoming big sagebrush	ARTRW*	15-20	15-25	---	---
Spiny hopsage	GRSP	---	20-30	---	---
Bud sagebrush	ARSP5	---	5-10	---	---
Basin big sagebrush	ARTRT*	---	---	10-15	15-20
Greene rabbitbrush	CHGR6	---	---	2-5	---
Nevada ephedra	EPNE	---	---	2-5	---
Fourwing saltbush	ATCA2	---	---	2-5	---
Black greasewood	SAVE4	---	---	---	2-10
Rubber rabbitbrush	CHNA2	---	---	---	2-5
Other shrubs	SSSS	5-15	5-10	5-10	---

Range site symbol	028B010N	028B052N	028B009N	024X006N
Potential production (lb/acre):				
Favorable years	800	600	700	1,500
Normal years	600	400	400	1,100
Unfavorable years	400	300	300	600

## 704--Orovada-McConnel association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Orovada	McConnel	1	2	3
Indian ricegrass	ORHY	20-30	---	10-20	20-30	---
Needleandthread	STCO4	10-20	---	---	10-20	---
Bottlebrush squirreltail	SIHY	5-10	---	2-10	5-10	---
Sandberg bluegrass	POSE	2-5	---	---	2-5	---
Thurber needlegrass	STTH2	---	20-50	---	---	---
Bluebunch wheatgrass	AGSP	---	5-10	---	---	---
Basin wildrye	ELCI2	---	---	---	---	30-50
Nevada bluegrass	PONE3	---	---	---	---	2-5
Western wheatgrass	AGSM	---	---	---	---	2-5
Other perennial grasses	PPGG	---	---	---	---	15-25
Balsamroot	BALSA	---	2-4	---	---	---
Tapertip hawksbeard	CRAC2	---	2-4	---	---	---
Other perennial forbs	PPFF	2-5	---	2-8	2-5	2-5
Wyoming big sagebrush	ARTRW*	15-20	15-20	---	15-20	---
Downy rabbitbrush	CHVIP	---	2-5	---	---	---
Spiny hopsage	GRSP	---	2-5	---	---	---
Winterfat	EULA5	---	---	60-70	---	---
Bud sagebrush	ARSP5	---	---	2-5	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	5-10
Other shrubs	SSSS	5-15	2-10	---	5-15	5-10

Range site symbol	028B010N	024X005N	024X004N	028B010N	028B003N
Potential production (lb/acre):					
Favorable years	800	800	500	800	2,600
Normal years	600	600	350	600	1,250
Unfavorable years	400	400	200	400	800

## 705--Orovada-Valmy association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Orovada	Valmy	1	2	3
Indian ricegrass	ORHY	20-30	2-5	---	20-30	20-30
Needleandthread	STCO4	10-20	---	---	10-20	10-20
Bottlebrush squirreltail	SIHY	5-10	2-5	---	5-10	5-10
Sandberg bluegrass	POSE	2-5	---	---	2-5	2-5
Basin wildrye	ELCI2	---	5-20	50-60	---	---
Western wheatgrass	AGSM	---	---	5-15	---	---
Thelypody	THELY	---	2-4	---	---	---
Other perennial forbs	PPFF	2-5	---	2-8	2-5	2-5
Wyoming big sagebrush	ARTRW*	15-20	5-10	---	15-20	15-20
Black greasewood	SAVE4	---	20-30	2-10	---	---
Basin big sagebrush	ARTRT*	---	5-15	15-20	---	---
Spiny hopsage	GRSP	---	5-15	---	---	---
Rubber rabbitbrush	CHNA2	---	---	2-5	---	---
Other shrubs	SSSS	5-15	---	---	5-15	5-15

Range site symbol	028B010N	024X022N	024X006N	028B010N	028B010N
Potential production (lb/acre):					
Favorable years	800	800	1,500	800	800
Normal years	600	600	1,100	600	600
Unfavorable years	400	350	600	400	400

## 751--Poorcal-Lopwash association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Poorcal	Lopwash	1	2	3
Indian ricegrass	ORHY	20-30	5-15	---	20-30	15-25
Needleandthread	STCO4	10-20	5-10	---	10-20	---
Bottlebrush squirreltail	SIHY	5-10	2-5	5-10	5-10	2-5
Sandberg bluegrass	POSE	2-5	---	---	2-5	---
Other perennial grasses	PPGG	---	5-10	T-10	---	5-10
Perennial forbs	PPFF	2-5	5-10	2-8	2-5	5-10
Wyoming big sagebrush	ARTRW*	15-20	---	---	15-20	---
Shadscale	ATCO	---	30-40	30-50	---	---
Bud sagebrush	ARSP5	---	5-10	5-15	---	---
Winterfat	EULA5	---	2-5	---	---	30-45
Fourwing saltbush	ATCA2	---	2-5	---	---	---
Black greasewood	SAVE4	---	---	15-30	---	---
Seepweed	SUAED	---	---	2-15	---	---
Other shrubs	SSSS	5-15	5-15	---	5-15	5-15
Range site symbol		028B010N	028B017N	024X003N	028B010N	028B013N
Potential production (lb/acre):						
Favorable years		800	700	600	800	800
Normal years		600	500	450	600	550
Unfavorable years		400	250	300	400	300



## 811--Ravenswood-Itca-Walti association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Ravenswood	Itca	Walti	1	2	3
Idaho fescue	FEID	X	X	25-50	---	---	10-20
Bluebunch wheatgrass	AGSP	X	X	15-30	---	15-20	---
Bluegrass	POA++	X	X	---	---	---	---
Thurber needlegress	STTH2	---	---	2-10	---	15-20	---
Spike fescue	LEKI2	---	---	2-10	---	---	---
Webber ricegrass	STWE	---	---	---	---	5-10	5-10
Sandberg bluegrass	POSE	---	---	---	---	5-8	2-5
Pine bluegrass	POSC	---	---	---	---	5-8	2-5
Cusick bluegrass	POCU3	---	---	---	---	5-8	2-5
Bottlebrush squirreltail	SIHY	---	---	---	---	---	5-10
Other perennial grasses	PPGG	X	X	---	---	---	---
Tapertip hawksbeard	CRAC2	X	X	---	---	---	---
Arrowleaf balsamroot	BASA3	X	X	---	---	---	---
Balsamroot	BALSA	---	---	2-5	---	2-5	---
Eriogonum	ERIOG	---	---	---	---	1-3	---
Phlox	PHLOX	---	---	---	---	1-3	2-5
Goldenweed	HAPLO2	---	---	---	---	---	2-5
Other perennial forbs	PPFF	X	X	---	---	---	---
Big sagebrush	ARTR2	X	X	---	---	---	---
Low sagebrush	ARAR8	---	---	10-20	---	20-30	5-15
Douglas rabbitbrush	CHVI8	---	---	2-5	---	---	---
Black sagebrush	ARARN	---	---	---	---	---	5-15
Mountain big sagebrush	ARVA2	---	---	---	---	---	1-5
Other shrubs	SSSS	X	X	---	---	---	---
Singleleaf pinyon	PIMO	X	X	---	---	---	---
Range site symbol		---	---	024X027N	None	024X018N	024X016N
Woodland site symbol		025X061N	025X061N	---	None	---	---
Potential production (1b/acre):							
Favorable years		500	500	1,200	---	700	350
Normal years		375	375	800	---	500	250
Unfavorable years		250	250	600	---	300	150

## 812--Ravenswood-Shagnasty-Walti association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Ravenswood	Shagnasty	Walti	1	2	3	4
Idaho fescue	FEID	X	X	25-50	---	---	---	---
Bluebunch wheatgrass	AGSP	X	X	15-30	---	10-20	---	---
Bluegrass	POA++	X	X	---	---	---	---	---
Thurber needlegrass	STH2	---	---	2-10	---	5-10	---	---
Spike fescue	LEKI2	---	---	2-10	---	---	---	---
Basin wildrye	ELCI2	---	---	---	30-50	2-5	---	---
Western wheatgrass	AGSM	---	---	---	5-10	---	---	---
Nevada bluegrass	PONE3	---	---	---	5-10	---	---	---
Pine bluegrass	POSC	---	---	---	---	2-5	---	---
Other perennial grasses	PPGG	X	X	---	5-15	10-20	---	---
Tapertip hawksbeard	CRAC2	X	X	---	---	---	---	---
Arrowleaf balsamroot	BASA3	X	X	---	---	---	---	---
Balsamroot	BALSA	---	---	2-5	---	---	---	---
Other perennial forbs	PPFF	X	X	---	5-10	5-12	---	---
Big sagebrush	ARTR2	X	X	---	---	---	---	---
Low sagebrush	ARAR8	---	---	10-20	---	---	---	---
Douglas rabbitbrush	CHVI8	---	---	2-5	---	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	5-10	---	---	---
Rubber rabbitbrush	CHNA2	---	---	---	2-5	---	---	---
Mountain big sagebrush	ARVA2	---	---	---	---	15-25	---	---
Antelope bitterbrush	PUTR2	---	---	---	---	5-10	---	---
Utah serviceberry	AMUT	---	---	---	---	2-10	---	---
Other shrubs	SSSS	X	X	---	5-10	5-15	---	---
Singleleaf pinyon	PIMO	X	X	---	---	---	---	---

Range site symbol	---	---	024X027N	028B024N	028B030N	None	None
Woodland site symbol	025X061N	025X061N	---	---	---	None	None
Potential production (lb/acre):							
Favorable years	500	500	1,200	2,800	1,000	---	---
Normal years	375	375	800	1,700	850	---	---
Unfavorable years	250	250	600	1,000	550	---	---

## 850--Relley silt loam, 0 to 2 percent slopes

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name	Inclusion number--			
		Relley	1	2	3	4
Bottlebrush squirreltail	SIHY	5-15	5-15	5-10	5-10	5-10
Indian ricegrass	ORHY	5-15	5-15	---	---	---
Sandberg bluegrass	POSE	2-5	2-5	---	---	---
Needleandthread	STCO4	1-3	1-3	---	---	---
Other perennial grasses	PPGG	---	---	T-10	T-10	T-10
Perennial forbs	PPFF	2-8	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-40	30-50	30-50	30-50
Bud sagebrush	ARSP5	20-30	20-30	5-15	5-15	5-15
Spiny hopsage	GRSP	2-5	2-5	---	---	---
Winterfat	EULA5	2-5	2-5	---	---	---
Black greasewood	SAVE4	---	---	15-30	15-30	15-30
Seepweed	SUAED	---	---	2-15	2-15	2-15
Other shrubs	SSSS	2-5	2-5	---	---	---
Range site symbol		024X002N	024X002N	024X003N	024X003N	024X003N
Potential production (lb/acre):						
Favorable years		700	700	600	600	600
Normal years		450	450	450	450	450
Unfavorable years		300	300	300	300	300

854--Relley silt loam, frequently flooded, 0 to 2 percent slopes

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Relley	1	2	3
Indian ricegrass	ORHY	10-30	---	5-15	5-15
Bottlebrush squirreltail	SIHY	5-10	---	5-15	5-15
Alkali sacaton	SPAI	T-5	---	---	---
Basin wildrye	ELCI2	---	50-60	---	---
Western wheatgrass	AGSM	---	5-15	---	---
Sandberg bluegrass	POSE	---	---	2-5	2-5
Needleandthread	STCO4	---	---	1-3	1-3
Perennial forbs	PPFF	T-5	2-8	2-8	2-8
Sickle saltbush	ATFA	50-65	---	---	---
Basin big sagebrush	ARTRT*	---	15-20	---	---
Black greasewood	SAVE4	---	2-10	---	---
Rubber rabbitbrush	CHNA2	---	2-5	---	---
Shadscale	ATCO	---	---	30-40	30-40
Bud sagebrush	ARSP5	---	---	20-30	20-30
Spiny hopsage	GRSP	---	---	2-5	2-5
Winterfat	EULA5	---	---	2-5	2-5
Other shrubs	SSSS	---	---	2-5	2-5
Range site symbol		O24X012N	O24X006N	O24X002N	O24X002N
Potential production (lb/acre):					
Favorable years		700	1,500	700	700
Normal years		400	1,100	450	450
Unfavorable years		200	600	300	300

## 910--Rutab loam, 0 to 2 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Rutab	1	2
Indian ricegrass	ORHY	20-30	---	20-30
Needleandthread	STCO4	10-20	---	10-20
Bottlebrush squirreltail	SIHY	5-10	---	5-10
Sandberg bluegrass	POSE	2-5	---	2-5
Basin wildrye	ELCI2	---	30-50	---
Nevada bluegrass	PONE3	---	2-5	---
Western wheatgrass	AGSM	---	2-5	---
Other perennial grasses	PPGG	---	15-25	---
Perennial forbs	PPFF	2-5	2-5	2-5
Wyoming big sagebrush	ARTRW*	15-20	---	15-20
Basin big sagebrush	ARTRT*	---	5-10	---
Other shrubs	SSSS	5-15	5-10	5-15

Range site symbol	028B010N	028B003N	028B010N
Potential production (lb/acre):			
Favorable years	800	2,600	800
Normal years	600	1,250	600
Unfavorable years	400	800	400

## 931--Shagnasty-Roca-Rock outcrop association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Shagnasty	Roca	Rock outcrop	1	2	3
Idaho fescue	FEID	X	---	---	---	10-15	---
Bluebunch wheatgrass	AGSP	X	40-60	---	5-15	5-10	---
Bluegrass	POA++	X	2-10	---	---	---	---
Thurber needlegrass	STTH2	---	5-10	---	2-5	---	---
Basin wildrye	ELCI2	---	2-5	---	---	---	30-50
Pine bluegrass	POSC	---	---	---	5-10	5-10	---
Indian ricegrass	ORHY	---	---	---	2-5	---	---
Western wheatgrass	AGSM	---	---	---	---	---	5-10
Nevada bluegrass	PONE3	---	---	---	---	---	5-10
Other perennial grasses	PPGG	X	---	---	10-15	10-15	5-15
Tapertip hawksbeard	CRAC2	X	2-5	---	---	---	---
Arrowleaf balsamroot	BASA3	X	2-5	---	---	---	---
Other perennial forbs	PPFF	X	---	---	10-15	5-10	5-10
Big sagebrush	ARTR2	X	---	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	5-10	---	---	---	---
Mountain big sagebrush	ARVA2	---	T-5	---	---	---	---
Low sagebrush	ARAR8	---	---	---	25-30	5-15	---
Black sagebrush	ARARN	---	---	---	---	5-15	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	5-10
Rubber rabbitbrush	CHNA2	---	---	---	---	---	2-5
Other shrubs	SSSS	X	---	---	10-20	5-10	5-10
Singleleaf pinyon	PIMO	X	---	---	---	---	---

Range site symbol	---	024X028N	None	028B037N	028B038N	028B024N
Woodland site symbol	025X061N	---	None	---	---	---
Potential production (lb/acre):						
Favorable years	500	1,000	---	700	800	2,800
Normal years	375	700	---	500	600	1,700
Unfavorable years	250	500	---	300	400	1,000

## 932--Shagnasty-Softscrabble association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name		Inclusion number--			
		Shagnasty	Softscrabble	1	2	3	4
Idaho fescue	FEID	X	20-40	25-50	---	---	---
Bluebunch wheatgrass	AGSP	X	20-30	15-30	15-25	---	---
Bluegrass	POA++	X	---	---	---	---	---
Basin wildrye	ELCI2	---	2-15	---	---	30-50	---
Thurber needlegrass	STTH2	---	2-10	2-10	15-25	---	---
Spike fescue	LEKI2	---	---	2-10	---	---	---
Western wheatgrass	AGSM	---	---	---	---	5-10	---
Nevada bluegrass	PONE3	---	---	---	---	5-10	5-10
Tufted hairgrass	DECA5	---	---	---	---	---	30-60
Alpine timothy	PHAL2	---	---	---	---	---	5-10
Sedge	CAREX	---	---	---	---	---	5-10
Meadow barley	HOBR2	---	---	---	---	---	2-5
Other perennial grasses	PPGG	X	---	---	10-20	5-15	2-10
Tapertip hawkbeard	CRAC2	X	1-5	---	2-5	---	---
Arrowleaf balsamroot	BASA3	X	1-5	---	2-5	---	---
Balsamroot	BALSA	---	---	2-5	---	---	---
Sierra clover	TRWO	---	---	---	---	---	2-5
Cinquefoil	POTEN	---	---	---	---	---	2-5
Other perennial forbs	PPFF	X	---	---	2-10	5-10	10-20
Big sagebrush	ARTR2	X	---	---	---	---	---
Mountain big sagebrush	ARVA2	---	5-15	---	5-10	---	---
Low sagebrush	ARAR8	---	---	10-20	---	---	---
Douglas rabbitbrush	CHVI8	---	---	2-5	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	5-10	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	5-10	---
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5	---
Willow	SALIX	---	---	---	---	---	2-5
Other shrubs	SSSS	X	---	---	2-10	5-10	2-5
Singleleaf pinyon	PIMO	X	---	---	---	---	---

Range site symbol	---	024X021N	024X027N	024X035N	028B024N	025X005N
Woodland site symbol	025X061N	---	---	---	---	---
Potential production (lb/acre):						
Favorable years	500	1,400	1,200	500	2,800	2,000
Normal years	375	1,000	800	400	1,700	1,700
Unfavorable years	250	700	600	250	1,000	1,000

942--Shipley silt loam, occasionally flooded, 0 to 2 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Shipley	1	2
Indian ricegrass	ORHY	15-25	2-5	20-30
Bottlebrush squirreltail	SIHY	2-5	2-5	5-10
Basin wildrye	ELCI2	---	10-20	---
Needleandthread	STCO4	---	2-5	10-20
Sandberg bluegrass	POSE	---	---	2-5
Other perennial grasses	PPGG	5-10	5-10	---
Perennial forbs	PPFF	5-10	5-10	2-5
Winterfat	EULA5	30-45	---	---
Basin big sagebrush	ARTRT*	---	10-15	---
Greene rabbitbrush	CHGR6	---	2-5	---
Nevada ephedra	EPNE	---	2-5	---
Fourwing saltbush	ATCA2	---	2-5	---
Wyoming big sagebrush	ARTRW*	---	---	15-20
Other shrubs	SSSS	5-15	5-10	5-15

Range site symbol	028B013N	028B009N	028B010N
Potential production (lb/acre):			
Favorable years	800	700	800
Normal years	550	400	600
Unfavorable years	300	300	400



## 950--Silverado sandy loam, 0 to 2 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Silverado	1	2	3
Indian ricegrass	ORHY	20-30	20-30	20-30	2-5
Needleandthread	STCO4	10-20	10-20	10-20	---
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	2-5
Sandberg bluegrass	POSE	2-5	2-5	2-5	---
Basin wildrye	ELCI2	---	---	---	5-20
Thelypody	THELY	---	---	---	2-4
Other perennial forbs	PPFF	2-5	2-5	2-5	---
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	5-10
Black greasewood	SAVE4	---	---	---	20-30
Basin big sagebrush	ARTRT*	---	---	---	5-15
Spiny hopsage	GRSP	---	---	---	5-15
Other shrubs	SSSS	5-15	5-15	5-15	---

Range site symbol	028B010N	028B010N	028B010N	024X022N
Potential production (lb/acre):				
Favorable years	800	800	800	800
Normal years	600	600	600	600
Unfavorable years	400	400	400	350

## 990--Sonoma-Wendane association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Sonoma	Wendane	1	2	3
Basin wildrye	ELCI2	50-60	40-60	50-60	5-20	---
Western wheatgrass	AGSM	5-15	---	---	---	---
Alkali sacaton	SPAI	---	15-30	---	---	---
Inland saltgrass	DISPS2	---	5-10	---	---	5-10
Nevada bluegrass	PONE3	---	---	5-15	---	5-10
Mat muhly	MURI	---	---	2-10	---	2-10
Sedge	CAREX	---	---	1-5	---	---
Bottlebrush squirreltail	SIHY	---	---	---	2-5	---
Indian ricegrass	ORHY	---	---	---	2-5	---
Wildrye	ELYMU	---	---	---	---	30-60
Other perennial grasses	PPGG	---	---	15-20	---	5-15
Thelypody	THELY	---	---	---	2-4	---
Sierra clover	TRWO	---	---	---	---	2-5
Other perennial forbs	PPFF	2-8	---	5-10	---	5-10
Basin big sagebrush	ARTRT*	15-20	---	10-15	5-15	2-5
Black greasewood	SAVE4	2-10	5-15	---	20-30	---
Rubber rabbitbrush	CHNA2	2-5	1-2	---	---	---
Alkali rabbitbrush	CHAL9	---	1-2	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	5-10	---
Spiny hopsage	GRSP	---	---	---	5-15	---
Willow	SALIX	---	---	---	---	5-10
Silver sagebrush	ARCA13	---	---	---	---	2-5
Other shrubs	SSSS	---	---	2-5	---	2-8
<hr/>						
Range site symbol		024X006N	024X007N	025X003N	024X022N	025X001N
Potential production (lb/acre):						
Favorable years		1,500	1,900	2,500	800	3,000
Normal years		1,100	1,400	1,900	600	2,500
Unfavorable years		600	800	1,200	350	1,800

## 998--Sonoma-Paranat association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Sonoma, frequently flooded	Paranat	Sonoma, occasionally flooded	1	2	3	4
Wildrye	ELYMU	30-60	30-60	---	---	---	---	---
Nevada bluegrass	PONE3	5-10	5-10	---	---	2-5	---	---
Inland saltgrass	DISPS2	5-10	5-10	---	5-10	---	5-10	---
Mat muhly	MURI	2-10	2-10	---	---	---	---	---
Basin wildrye	ELCI2	---	---	50-60	40-60	30-50	40-60	20-40
Western wheatgrass	AGSM	---	---	5-15	---	2-5	---	---
Alkali sacaton	SPAI	---	---	---	15-30	---	15-30	---
Other perennial grasses	PPGG	5-15	5-15	---	---	15-25	---	---
Sierra clover	TRWO	2-5	2-5	---	---	---	---	---
Other perennial forbs	PPFF	5-10	5-10	2-8	---	2-5	---	2-8
Willow	SALIX	5-10	5-10	---	---	---	---	---
Basin big sagebrush	ARTRT*	2-5	2-5	15-20	---	5-10	---	2-10
Silver sagebrush	ARCA13	2-5	2-5	---	---	---	---	---
Black greasewood	SAVE4	---	---	2-10	5-15	---	5-15	5-15
Rubber rabbitbrush	CHNA2	---	---	2-5	1-2	---	1-2	---
Alkali rabbitbrush	CHAL9	---	---	---	1-2	---	1-2	---
Torrey quailbush	ATTO	---	---	---	---	---	---	30-50
Other shrubs	SSSS	2-8	2-8	---	---	5-10	---	---

Range site symbol	025X001N	025X001N	024X006N	024X007N	028B003N	024X007N	024X015N
Potential production (lb/acre):							
Favorable years	3,000	3,000	1,500	1,900	2,600	1,900	1,500
Normal years	2,500	2,500	1,100	1,400	1,250	1,400	1,200
Unfavorable years	1,800	1,800	600	800	800	800	800

## 999-Sonoma-Wendane-Paranat association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Sonoma	Wendane	Paranat	1	2	3
Basin wildrye	ELCI2	50-60	40-60	---	---	30-50	5-15
Western wheatgrass	AGSM	5-15	---	---	---	2-5	---
Alkali sacaton	SPAI	---	15-30	---	---	---	---
Inland saltgrass	DISPS2	---	5-10	5-10	5-10	---	5-10
Wildrye	ELYMU	---	---	30-60	30-60	---	---
Nevada bluegrass	PONE3	---	---	5-10	5-10	2-5	---
Mat muhly	MURI	---	---	2-10	2-10	---	---
Other perennial grasses	PPGG	---	---	5-15	5-15	15-25	---
Sierra clover	TRWO	---	---	2-5	2-5	---	---
Other perennial forbs	PPFF	2-8	---	5-10	5-10	2-5	T-5
Basin big sagebrush	ARTRT*	15-20	---	2-5	2-5	5-10	---
Black greasewood	SAVE4	2-10	5-15	---	---	---	60-75
Rubber rabbitbrush	CHNA2	2-5	1-2	---	---	---	---
Alkali rabbitbrush	CHAL9	---	1-2	---	---	---	---
Willow	SALIX	---	---	5-10	5-10	---	---
Silver sagebrush	ARCA13	---	---	2-5	2-5	---	---
Other shrubs	SSSS	---	---	2-8	2-8	5-10	---

Range site symbol	024X006N	024X007N	025X001N	025X001N	028B003N	024X011N
Potential production (lb/acre):						
Favorable years	1,500	1,900	3,000	3,000	2,600	500
Normal years	1,100	1,400	2,500	2,500	1,250	350
Unfavorable years	600	800	1,800	1,800	800	200

## 1011--Stampede-Handy-Caniwe association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Stampede	Handy	Caniwe	1	2
Bluebunch wheatgrass	AGSP	20-30	5-10	5-10	---	---
Thurber needlegrass	STTH2	15-25	20-30	20-30	---	---
Nevada bluegrass	PONE3	2-10	---	---	---	2-5
Indian ricegrass	ORHY	---	5-10	5-10	20-30	---
Pine bluegrass	POSC	---	2-5	2-5	---	---
Needleandthread	STCO4	---	2-5	2-5	10-20	---
Bottlebrush squirreltail	SIHY	---	---	---	5-10	---
Sandberg bluegrass	POSE	---	---	---	2-5	---
Basin wildrye	ELCI2	---	---	---	---	30-50
Western wheatgrass	AGSM	---	---	---	---	2-5
Other perennial grasses	PPGG	10-15	5-10	5-10	---	15-25
Tapertip hawksbeard	CRAC2	2-5	---	---	---	---
Arrowleaf balsamroot	BASA3	2-5	---	---	---	---
Other perennial forbs	PPFF	2-5	5-10	5-10	2-5	2-5
Big sagebrush	ARTR2	10-15	---	---	---	---
Antelope bitterbrush	PUTR2	0-10	1-10	1-10	---	---
Wyoming big sagebrush	ARTRW*	---	10-15	10-15	15-20	---
Rabbitbrush	CHRS9	---	2-5	2-5	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	5-10
Other shrubs	SSSS	5-10	---	---	5-15	5-10

Range site symbol	O25X014N	O28B007N	O28B007N	O28B010N	O28B003N
Potential production (lb/acre):					
Favorable years	1,000	1,000	1,000	800	2,600
Normal years	800	750	750	600	1,250
Unfavorable years	600	600	600	400	800

## 1041--Tenabo-Orovada-Bufferan association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Tenabo	Orovada	Bufferan	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-10	5-10	5-15	5-15	2-5
Indian ricegrass	ORHY	5-15	20-30	20-30	5-15	5-15	2-5
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	2-5	---
Needleandthread	STCO4	1-3	10-20	10-20	1-3	1-3	---
Basin wildrye	ELCI2	---	---	---	---	---	5-20
Thelypody	THELY	---	---	---	---	---	2-4
Other perennial forbs	PPFF	2-8	2-5	2-5	2-8	2-8	---
Shadscale	ATCO	30-40	---	---	30-40	30-40	---
Bud sagebrush	ARSP5	20-30	---	---	20-30	20-30	---
Spiny hopsage	GRSP	2-5	---	---	2-5	2-5	5-15
Winterfat	EULA5	2-5	---	---	2-5	2-5	---
Wyoming big sagebrush	ARTRW*	---	15-20	15-20	---	---	5-10
Black greasewood	SAVE4	---	---	---	---	---	20-30
Basin big sagebrush	ARTRT*	---	---	---	---	---	5-15
Other shrubs	SSSS	2-5	5-15	5-15	2-5	2-5	---
Range site symbol		024X002N	028B010N	028B010N	024X002N	024X002N	024X022N
Potential production (lb/acre):							
Favorable years		700	800	800	700	700	800
Normal years		450	600	600	450	450	600
Unfavorable years		300	400	400	300	300	350

## 1042--Tenabo-Ricert-Desatoya association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Tenabo	Ricert	Desatoya	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	---	---	2-10	---
Indian ricegrass	ORHY	5-15	5-15	10-15	---	5-15	---
Sandberg bluegrass	POSE	2-5	2-5	---	---	2-10	---
Needleandthread	STCO4	1-3	1-3	---	---	---	---
Thurber needlegrass	STTH2	---	---	10-15	20-50	10-20	20-50
Bluegrass	POA++	---	---	2-10	---	---	---
Bluebunch wheatgrass	AGSP	---	---	---	5-10	---	5-10
Other perennial grasses	PPGG	---	---	5-20	---	---	---
Globemallow	SPHAE	---	---	2-5	---	1-2	---
Balsamroot	BALSA	---	---	---	2-4	---	2-4
Tapertip hawksbeard	CRAC2	---	---	---	2-4	1-2	2-4
Phlox	PHLOX	---	---	---	---	1-2	---
Other perennial forbs	PPFF	2-8	2-8	---	---	---	---
Shadscale	ATCO	30-40	30-40	---	---	---	---
Bud sagebrush	ARSP5	20-30	20-30	---	---	---	---
Spiny hopsage	GRSP	2-5	2-5	---	2-5	5-15	2-5
Winterfat	EULA5	2-5	2-5	---	---	---	---
Black sagebrush	ARARN	---	---	25-35	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	15-20	30-35	15-20
Downy rabbitbrush	CHVIP	---	---	---	2-5	---	2-5
Other shrubs	SSSS	2-5	2-5	5-35	2-10	---	2-10

Range site symbol	024X002N	024X002N	024X030N	024X005N	024X020N	024X005N
Potential production (lb/acre):						
Favorable years	700	700	500	800	700	800
Normal years	450	450	350	600	450	600
Unfavorable years	300	300	250	400	300	400

## 1092--Tulase-Bubus-McConnel association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Tulase	Bubus	McConnel	1	2	3
Thurber needlegrass	STTH2	20-50	---	20-50	---	20-50	20-50
Bluebunch wheatgrass	AGSP	5-10	---	5-10	---	5-10	5-10
Bottlebrush squirreltail	SIHY	---	5-15	---	5-10	---	---
Indian ricegrass	ORHY	---	5-15	---	---	---	---
Sandberg bluegrass	POSE	---	2-5	---	---	---	---
Needleandthread	STC04	---	1-3	---	---	---	---
Other perennial grasses	PPGG	---	---	---	T-10	---	---
Balsamroot	BALSA	2-4	---	2-4	---	2-4	2-4
Tapertip hawksbeard	CRAC2	2-4	---	2-4	---	2-4	2-4
Other perennial forbs	PPFF	---	2-8	---	2-8	---	---
Wyoming big sagebrush	ARTRW*	15-20	---	15-20	---	15-20	15-20
Downy rabbitbrush	CHVIP	2-5	---	2-5	---	2-5	2-5
Spiny hopsage	GRSP	2-5	2-5	2-5	---	2-5	2-5
Shadscale	ATCO	---	30-40	---	30-50	---	---
Bud sagebrush	ARSP5	---	20-30	---	5-15	---	---
Winterfat	EULA5	---	2-5	---	---	---	---
Black greasewood	SAVE4	---	---	---	15-30	---	---
Seepweed	SUAED	---	---	---	2-15	---	---
Other shrubs	SSSS	2-10	2-5	2-10	---	2-10	2-10

Range site symbol	024X005N	024X002N	024X005N	024X003N	024X005N	024X005N
Potential production (lb/acre):						
Favorable years	800	700	800	600	800	800
Normal years	600	450	600	450	600	600
Unfavorable years	400	300	400	300	400	400



## 1131--Fortank gravelly loam, 4 to 8 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Fortank	1	2	3
Indian ricegrass	ORHY	20-30	15-25	20-30	20-30
Needleandthread	STCO4	10-20	5-10	10-20	10-20
Bottlebrush squirreltail	SIHY	5-10	---	5-10	5-10
Sandberg bluegrass	POSE	2-5	---	2-5	2-5
Basin wildrye	ELCI2	---	2-5	---	---
Bluebunch wheatgrass	AGSP	---	2-5	---	---
Perennial forbs	PPFF	2-5	5-10	2-5	2-5
Wyoming big sagebrush	ARTRW*	15-20	---	15-20	15-20
Black sagebrush	ARARN	---	20-30	---	---
Winterfat	EULA5	---	5-10	---	---
Bud sagebrush	ARSP5	---	2-5	---	---
Small rabbitbrush	CHVIS	---	2-5	---	---
Other shrubs	SSSS	5-15	---	5-15	5-15

Range site symbol	028B010N	028B011N	028B010N	028B010N
Potential production (lb/acre):				
Favorable years	800	950	800	800
Normal years	600	700	600	600
Unfavorable years	400	400	400	400

## 1140--Wendane silt loam, frequently flooded

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Wendane	1	2	3
Basin wildrye	ELCI2	40-60	---	5-15	50-60
Alkali sacaton	SPAI	15-30	---	---	---
Inland saltgrass	DISPS2	5-10	---	5-10	---
Bottlebrush squirreltail	SIHY	---	5-10	---	---
Western wheatgrass	AGSM	---	---	---	5-15
Other perennial grasses	PPGG	---	T-10	---	---
Perennial forbs	PPFF	---	2-8	T-5	2-8
Black greasewood	SAVE4	5-15	15-30	60-75	2-10
Alkali rabbitbrush	CHAL9	1-2	---	---	---
Rubber rabbitbrush	CHNA2	1-2	---	---	2-5
Shadscale	ATCO	---	30-50	---	---
Bud sagebrush	ARSP5	---	5-15	---	---
Seepweed	SUAED	---	2-15	---	---
Basin big sagebrush	ARTRT*	---	---	---	15-20

Range site symbol	O24X007N	O24X003N	O24X011N	O24X006N
Potential production (lb/acre):				
Favorable years	1,900	600	500	1,500
Normal years	1,400	450	350	1,100
Unfavorable years	800	300	200	600

## 1141--Wendane-Umberland association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Wendane, strongly sodic	Wendane, frequently flooded	Umberland	1	2	3
Basin wildrye	ELCI2	15-25	40-60	T-5	50-60	5-15	---
Alkali sacaton	SPAI	5-10	15-30	40-70	---	---	---
Inland saltgrass	DISPS2	2-5	5-10	T-15	---	5-10	---
Western wheatgrass	AGSM	---	---	---	5-15	---	---
Other perennial grasses	PPGG	2-5	---	---	---	---	---
Perennial forbs	PPFF	2-5	---	2-8	2-8	T-5	---
Silver buffaloberry	SHAR	10-20	---	---	---	---	---
Black greasewood	SAVE4	5-15	5-15	2-5	2-10	60-75	---
Alkali rabbitbrush	CHAL9	---	1-2	---	---	---	---
Rubber rabbitbrush	CHNA2	---	1-2	---	2-5	---	---
Iodinebush	ALOC2	---	---	10-20	---	---	---
Saltbush	ATRIP	---	---	5-10	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	15-20	---	---
Other shrubs	SSSS	5-15	---	---	---	---	---

Range site symbol	028B057N	024X007N	024X010N	024X006N	024X011N	None
Potential production (lb/acre):						
Favorable years	1,500	1,900	450	1,500	500	---
Normal years	1,000	1,400	300	1,100	350	---
Unfavorable years	600	800	150	600	200	---

## 1142--Wendane-Gund association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Wendane	Gund	Gund, drained	1	2
Basin wildrye	ELCI2	40-60	50-60	15-20	5-15	T-5
Alkali sacaton	SPAI	15-30	---	---	---	40-70
Inland saltgrass	DISPS2	5-10	---	2-10	5-10	T-15
Western wheatgrass	AGSM	---	5-15	---	---	---
Bottlebrush squirreltail	SIHY	---	---	2-10	---	---
Perennial forbs	PPFF	---	2-8	2-8	T-5	2-8
Black greasewood	SAVE4	5-15	2-10	40-60	60-75	2-5
Alkali rabbitbrush	CHAL9	1-2	---	---	---	---
Rubber rabbitbrush	CHNA2	1-2	2-5	---	---	---
Basin big sagebrush	ARTRT*	---	15-20	---	---	---
Iodinebush	ALOC2	---	---	---	---	10-20
Saltbush	ATRIP	---	---	---	---	5-10

Range site symbol	024X007N	024X006N	024X008N	024X011N	024X010N
Potential production (lb/acre):					
Favorable years	1,900	1,500	800	500	450
Normal years	1,400	1,100	600	350	300
Unfavorable years	800	600	400	200	150

## 1143--Wendane silt loam, occasionally flooded

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Wendane	1	2	3
Basin wildrye	ELCI2	5-15	40-60	40-60	40-60
Inland saltgrass	DISPS2	5-10	5-10	5-10	5-10
Alkali sacaton	SPAI	---	15-30	15-30	15-30
Perennial forbs	PPFF	T-5	---	---	---
Black greasewood	SAVE4	60-75	5-15	5-15	5-15
Alkali rabbitbrush	CHAL9	---	1-2	1-2	1-2
Rubber rabbitbrush	CHNA2	---	1-2	1-2	1-2
<hr/>					
Range site symbol		024X011N	024X007N	024X007N	024X007N
Potential production (lb/acre):					
Favorable years		500	1,900	1,900	1,900
Normal years		350	1,400	1,400	1,400
Unfavorable years		200	800	800	800

## 1145--Wendane-Playas association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Wendane	Playas	1	2	3
Basin wildrye	ELCI2	5-15	---	T-5	40-60	---
Inland saltgrass	DISPS2	5-10	---	T-15	5-10	---
Alkali sacaton	SPAI	---	---	40-70	15-30	---
Idaho fescue	FEID	---	---	---	---	10-20
Webber ricegrass	STWE	---	---	---	---	5-10
Bottlebrush squirreltail	SIHY	---	---	---	---	5-10
Cusick bluegrass	POCU3	---	---	---	---	2-5
Sandberg bluegrass	POSE	---	---	---	---	2-5
Pine bluegrass	POSC	---	---	---	---	2-5
Goldenweed	HAPLO2	---	---	---	---	2-5
Phlox	PHLOX	---	---	---	---	2-5
Other perennial forbs	PPFF	T-5	---	2-8	---	---
Black greasewood	SAVE4	60-75	---	2-5	5-15	---
Iodinebush	ALOC2	---	---	10-20	---	---
Saltbush	ATRIP	---	---	5-10	---	---
Alkali rabbitbrush	CHAL9	---	---	---	1-2	---
Rubber rabbitbrush	CHNA2	---	---	---	1-2	---
Low sagebrush	ARAR8	---	---	---	---	5-15
Black sagebrush	ARARN	---	---	---	---	5-15
Mountain big sagebrush	ARVA2	---	---	---	---	1-5

Range site symbol	024X011N	None	024X010N	024X007N	024X016N
Potential production (lb/acre):					
Favorable years	500	---	450	1,900	350
Normal years	350	---	300	1,400	250
Unfavorable years	200	---	150	800	150

## 1146--Wendane-Sonoma-Valmy association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Wendane	Sonoma	Valmy	1	2	3
Basin wildrye	ELCI2	40-60	50-60	5-20	---	20-40	---
Alkali sacaton	SPAI	15-30	---	---	---	---	---
Inland saltgrass	DISPS2	5-10	---	---	5-10	---	---
Western wheatgrass	AGSM	---	5-15	---	---	---	---
Bottlebrush squirreltail	SIHY	---	---	2-5	---	---	5-10
Indian ricegrass	ORHY	---	---	2-5	---	---	---
Wildrye	ELYMU	---	---	---	30-60	---	---
Nevada bluegrass	PONE3	---	---	---	5-10	---	---
Mat muhly	MURI	---	---	---	2-10	---	---
Other perennial grasses	PPGG	---	---	---	5-15	---	T-10
Thelypody	THELY	---	---	2-4	---	---	---
Sierra clover	TRWO	---	---	---	2-5	---	---
Other perennial forbs	PPFF	---	2-8	---	5-10	2-8	2-8
Black greasewood	SAVE4	5-15	2-10	20-30	---	5-15	15-30
Alkali rabbitbrush	CHAL9	1-2	---	---	---	---	---
Rubber rabbitbrush	CHNA2	1-2	2-5	---	---	---	---
Basin big sagebrush	ARTRT*	---	15-20	5-15	2-5	2-10	---
Wyoming big sagebrush	ARTRW*	---	---	5-10	---	---	---
Spiny hopsage	GRSP	---	---	5-15	---	---	---
Willow	SALIX	---	---	---	5-10	---	---
Silver sagebrush	ARCA13	---	---	---	2-5	---	---
Torrey quailbush	ATTO	---	---	---	---	30-50	---
Shadscale	ATCO	---	---	---	---	---	30-50
Bud sagebrush	ARSP5	---	---	---	---	---	5-15
Seepweed	SUAED	---	---	---	---	---	2-15
Other shrubs	SSSS	---	---	---	2-8	---	---

Range site symbol	024X007N	024X006N	024X022N	025X001N	024X015N	024X003N
Potential production (lb/acre):						
Favorable years	1,900	1,500	800	3,000	1,500	600
Normal years	1,400	1,100	600	2,500	1,200	450
Unfavorable years	800	600	350	1,800	800	300

## 1148--Wendane-Bubus association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Wendane	Bubus	1	2	3
Basin wildrye	ELCI2	40-60	---	50-60	---	---
Alkali sacaton	SPAI	15-30	---	---	---	---
Inland saltgrass	DISPS2	5-10	---	---	---	---
Bottlebrush squirreltail	SIHY	---	5-10	---	5-10	5-15
Western wheatgrass	AGSM	---	---	5-15	---	---
Indian ricegrass	ORHY	---	---	---	---	5-15
Sandberg bluegrass	POSE	---	---	---	---	2-5
Needleandthread	STCO4	---	---	---	---	1-3
Other perennial grasses	PPGG	---	T-10	---	T-10	---
Perennial forbs	PPFF	---	2-8	2-8	2-8	2-8
Black greasewood	SAVE4	5-15	15-30	2-10	15-30	---
Alkali rabbitbrush	CHAL9	1-2	---	---	---	---
Rubber rabbitbrush	CHNA2	1-2	---	2-5	---	---
Shadscale	ATCO	---	30-50	---	30-50	30-40
Bud sagebrush	ARSP5	---	5-15	---	5-15	20-30
Seepweed	SUAED	---	2-15	---	2-15	---
Basin big sagebrush	ARTRT*	---	---	15-20	---	---
Spiny hopsage	GRSP	---	---	---	---	2-5
Winterfat	EULA5	---	---	---	---	2-5
Other shrubs	SSSS	---	---	---	---	2-5

Range site symbol	024X007N	024X003N	024X006N	024X003N	024X002N
Potential production (lb/acre):					
Favorable years	1,900	600	1,500	600	700
Normal years	1,400	450	1,100	450	450
Unfavorable years	800	300	600	300	300



## 1169--Whirlo-Broyles association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Whirlo	Broyles	1	2
Bottlebrush squirreltail	SIHY	5-15	5-15	5-10	2-10
Indian ricegrass	ORHY	5-15	5-15	20-30	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-10
Needleandthread	STCO4	1-3	1-3	10-20	---
Thurber needlegrass	STTH2	---	---	---	10-20
Tapertip hawksbeard	CRAC2	---	---	---	1-2
Globemallow	SPHAE	---	---	---	1-2
Phlox	PHLOX	---	---	---	1-2
Other perennial forbs	PPFF	2-8	2-8	2-5	---
Shadscale	ATCO	30-40	30-40	---	---
Bud sagebrush	ARSP5	20-30	20-30	---	---
Spiny hopsage	GRSP	2-5	2-5	---	5-15
Winterfat	EULA5	2-5	2-5	---	---
Wyoming big sagebrush	ARTRW*	---	---	15-20	30-35
Other shrubs	SSSS	2-5	2-5	5-15	---
<hr/>					
Range site symbol		024X002N	024X002N	028B010N	024X020N
Potential production (lb/acre):					
Favorable years		700	700	800	700
Normal years		450	450	600	450
Unfavorable years		300	300	400	300

## 1173--Wholan silt loam, alkaline

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Wholan	1	2
Indian ricegrass	ORHY	10-30	5-15	20-30
Bottlebrush squirreltail	SIHY	5-10	5-15	5-10
Alkali sacaton	SPAI	T-5	---	---
Sandberg bluegrass	POSE	---	2-5	2-5
Needleandthread	STCO4	---	1-3	10-20
Perennial forbs	PPFF	T-5	2-8	2-5
Sickle saltbush	ATFA	50-65	---	---
Shadscale	ATCO	---	30-40	---
Bud sagebrush	ARSP5	---	20-30	---
Spiny hopsage	GRSP	---	2-5	---
Winterfat	EULA5	---	2-5	---
Wyoming big sagebrush	ARTRW*	---	---	15-20
Other shrubs	SSSS	---	2-5	5-15

Range site symbol	024X012N	024X002N	028B010N
Potential production (lb/acre):			
Favorable years	700	700	800
Normal years	400	450	600
Unfavorable years	200	300	400

## 1177--Wholan-Rasille association, alkaline

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Wholan	Rasille	1	2	3
Indian ricegrass	ORHY	10-30	---	---	5-15	5-15
Bottlebrush squirreltail	SIHY	5-10	---	---	2-10	5-15
Alkali sacaton	SPAI	T-5	---	---	---	---
Thurber needlegrass	STTH2	---	20-50	---	10-20	---
Bluebunch wheatgrass	AGSP	---	5-10	---	---	---
Basin wildrye	ELCI2	---	---	50-60	---	---
Western wheatgrass	AGSM	---	---	5-15	---	---
Sandberg bluegrass	POSE	---	---	---	2-10	2-5
Needleandthread	STCO4	---	---	---	---	1-3
Balsamroot	BALSA	---	2-4	---	---	---
Tapertip hawksbeard	CRAC2	---	2-4	---	1-2	---
Globemallow	SPHAE	---	---	---	1-2	---
Phlox	PHLOX	---	---	---	1-2	---
Other perennial forbs	PPFF	T-5	---	2-8	---	2-8
Sickle saltbush	ATFA	50-65	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	15-20	---	30-35	---
Downy rabbitbrush	CHVIP	---	2-5	---	---	---
Spiny hopsage	GRSP	---	2-5	---	5-15	2-5
Basin big sagebrush	ARTRT*	---	---	15-20	---	---
Black greasewood	SAVE4	---	---	2-10	---	---
Rubber rabbitbrush	CHNA2	---	---	2-5	---	---
Shadscale	ATCO	---	---	---	---	30-40
Bud sagebrush	ARSP5	---	---	---	---	20-30
Winterfat	EULA5	---	---	---	---	2-5
Other shrubs	SSSS	---	2-10	---	---	2-5

Range site symbol	024X012N	024X005N	024X006N	024X020N	024X002N
Potential production (lb/acre):					
Favorable years	700	800	1,500	700	700
Normal years	400	600	1,100	450	450
Unfavorable years	200	400	600	300	300

## 1178--Wholan-Rasille association, nonalkaline

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Wholan	Rasille	1	2	3
Indian ricegrass	ORHY	10-20	20-30	10-30	5-15	20-30
Bottlebrush squirreltail	SIHY	2-10	5-10	5-10	5-15	5-10
Needleandthread	STCO4	---	10-20	---	1-3	10-20
Sandberg bluegrass	POSE	---	2-5	---	2-5	2-5
Alkali sacaton	SPAI	---	---	T-5	---	---
Perennial forbs	PPFF	2-8	2-5	T-5	2-8	2-5
Winterfat	EULA5	60-70	---	---	2-5	---
Bud sagebrush	ARSP5	2-5	---	---	20-30	---
Wyoming big sagebrush	ARTRW*	---	15-20	---	---	15-20
Sickle saltbush	ATFA	---	---	50-65	---	---
Shadscale	ATCO	---	---	---	30-40	---
Spiny hopsage	GRSP	---	---	---	2-5	---
Other shrubs	SSSS	---	5-15	---	2-5	5-15

Range site symbol	024X004N	028B010N	024X012N	024X002N	028B010N
Potential production (lb/acre):					
Favorable years	500	800	700	700	800
Normal years	350	600	400	450	600
Unfavorable years	200	400	200	300	400

## 1281--Ricert-Whirlo-Pineval association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Ricert	Whirlo	Pineval	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-10	5-15	2-10	5-15
Indian ricegrass	ORHY	5-15	5-15	20-30	5-15	2-10	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	2-5	2-5
Needleandthread	STCO4	1-3	1-3	10-20	1-3	---	1-3
Webber ricegrass	STWE	---	---	---	---	2-10	---
Thurber needlegrass	STTH2	---	---	---	---	2-5	---
Desert needlegrass	STSP3	---	---	---	---	2-5	---
Pine bluegrass	POSC	---	---	---	---	2-5	---
Eriogonum	ERIOG	---	---	---	---	1-2	---
Hawksbeard	CREPI	---	---	---	---	1-2	---
Other perennial forbs	PPFF	2-8	2-8	2-5	2-8	---	2-8
Shadscale	ATCO	30-40	30-40	---	30-40	10-25	30-40
Bud sagebrush	ARSP5	20-30	20-30	---	20-30	2-5	20-30
Spiny hopsage	GRSP	2-5	2-5	---	2-5	5-15	2-5
Winterfat	EULA5	2-5	2-5	---	2-5	---	2-5
Wyoming big sagebrush	ARTRW*	---	---	15-20	---	10-25	---
Downy rabbitbrush	CHVIP	---	---	---	---	2-5	---
Other shrubs	SSSS	2-5	2-5	5-15	2-5	---	2-5

Range site symbol	024X002N	024X002N	028B010N	024X002N	024X026N	024X002N
Potential production (lb/acre):						
Favorable years	700	700	800	700	400	700
Normal years	450	450	600	450	300	450
Unfavorable years	300	300	400	300	200	300

## 1282--Ricert-Broyles association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Ricert	Broyles	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	2-10	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-10	2-5
Needleandthread	STCO4	1-3	1-3	1-3	---	1-3
Thurber needlegrass	STTH2	---	---	---	10-20	---
Tapertip hawksbeard	CRAC2	---	---	---	1-2	---
Globemallow	SPHAE	---	---	---	1-2	---
Phlox	PHLOX	---	---	---	1-2	---
Other perennial forbs	PPFF	2-8	2-8	2-8	---	2-8
Shadscale	ATCO	30-40	30-40	30-40	---	30-40
Bud sagebrush	ARSP5	20-30	20-30	20-30	---	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5	5-15	2-5
Winterfat	EULA5	2-5	2-5	2-5	---	2-5
Wyoming big sagebrush	ARTRW*	---	---	---	30-35	---
Other shrubs	SSSS	2-5	2-5	2-5	---	2-5

Range site symbol	024X002N	024X002N	024X002N	024X020N	024X002N
Potential production (lb/acre):					
Favorable years	700	700	700	700	700
Normal years	450	450	450	450	450
Unfavorable years	300	300	300	300	300

## 1284--Ricert-Zineb-Pineval association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Ricert	Zineb	Pineval	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-10	5-10	2-5	2-5	5-10
Indian ricegrass	ORHY	5-15	20-30	20-30	5-15	2-5	20-30
Sandberg bluegrass	POSE	2-5	2-5	2-5	---	---	2-5
Needleandthread	STCO4	1-3	10-20	10-20	5-10	---	10-20
Basin wildrye	ELCI2	---	---	---	---	5-20	---
Other perennial grasses	PPGG	---	---	---	5-10	---	---
Thelypody	THELY	---	---	---	---	2-4	---
Other perennial forbs	PPFF	2-8	2-5	2-5	5-10	---	2-5
Shadscale	ATCO	30-40	---	---	30-40	---	---
Bud sagebrush	ARSP5	20-30	---	---	5-10	---	---
Spiny hopsage	GRSP	2-5	---	---	---	5-15	---
Winterfat	EULA5	2-5	---	---	2-5	---	---
Wyoming big sagebrush	ARTRW*	---	15-20	15-20	---	5-10	15-20
Fourwing saltbush	ATCA2	---	---	---	2-5	---	---
Black greasewood	SAVE4	---	---	---	---	20-30	---
Basin big sagebrush	ARTRT*	---	---	---	---	5-15	---
Other shrubs	SSSS	2-5	5-15	5-15	5-15	---	5-15
<hr/>							
Range site symbol		024X002N	028B010N	028B010N	028B017N	024X022N	028B010N
Potential production (lb/acre):							
Favorable years		700	800	800	700	800	800
Normal years		450	600	600	500	600	600
Unfavorable years		300	400	400	250	350	400

## 1285--Ricert-Bubus-Broyles association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Ricert	Bubus	Broyles	1	2
Bottlebrush squirreltail	SIHY	5-15	5-10	5-15	5-10	2-5
Indian ricegrass	ORHY	5-15	---	5-15	20-30	2-5
Sandberg bluegrass	POSE	2-5	---	2-5	2-5	---
Needleandthread	STCO4	1-3	---	1-3	10-20	---
Basin wildrye	ELCI2	---	---	---	---	5-20
Other perennial grasses	PPGG	---	T-10	---	---	---
Thelypody	THELY	---	---	---	---	2-4
Other perennial forbs	PPFF	2-8	2-8	2-8	2-5	---
Shadscale	ATCO	30-40	30-50	30-40	---	---
Bud sagebrush	ARSP5	20-30	5-15	20-30	---	---
Spiny hopsage	GRSP	2-5	---	2-5	---	5-15
Winterfat	EULA5	2-5	---	2-5	---	---
Black greasewood	SAVE4	---	15-30	---	---	20-30
Seepweed	SUAED	---	2-15	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	15-20	5-10
Basin big sagebrush	ARTRT*	---	---	---	---	5-15
Other shrubs	SSSS	2-5	---	2-5	5-15	---

Range site symbol	024X002N	024X003N	024X002N	028B010N	024X022N
Potential production (lb/acre):					
Favorable years	700	600	700	800	800
Normal years	450	450	450	600	600
Unfavorable years	300	300	300	400	350



## 1286--Ricert-Tenabo-Broyles association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Ricert	Tenabo	Broyles	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	5-10	5-10	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	20-30	20-30	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	2-5	2-5
Needleandthread	STCO4	1-3	1-3	1-3	10-20	10-20	1-3
Perennial forbs	PPFF	2-8	2-8	2-8	2-5	2-5	2-8
Shadscale	ATCO	30-40	30-40	30-40	---	---	30-40
Bud sagebrush	ARSP5	20-30	20-30	20-30	---	---	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5	---	---	2-5
Winterfat	EULA5	2-5	2-5	2-5	---	---	2-5
Wyoming big sagebrush	ARTRW*	---	---	---	15-20	15-20	---
Other shrubs	SSSS	2-5	2-5	2-5	5-15	5-15	2-5
Range site symbol		024X002N	024X002N	024X002N	028B010N	028B010N	024X002N
Potential production (lb/acre):							
Favorable years		700	700	700	800	800	700
Normal years		450	450	450	600	600	450
Unfavorable years		300	300	300	400	400	300

## 1287--Ricert-Orovada-Broyles association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Ricert	Orovada	Broyles	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-10	5-15	---	5-10	5-15
Indian ricegrass	ORHY	5-15	20-30	5-15	10-15	20-30	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	---	2-5	2-5
Needleandthread	STCO4	1-3	10-20	1-3	---	10-20	1-3
Thurber needlegrass	STTH2	---	---	---	10-15	---	---
Bluegrass	POA++	---	---	---	2-10	---	---
Other perennial grasses	PPGG	---	---	---	5-20	---	---
Globemallow	SPHAE	---	---	---	2-5	---	---
Other perennial forbs	PPFF	2-8	2-5	2-8	---	2-5	2-8
Shadscale	ATCO	30-40	---	30-40	---	---	30-40
Bud sagebrush	ARSP5	20-30	---	20-30	---	---	20-30
Spiny hopsage	GRSP	2-5	---	2-5	---	---	2-5
Winterfat	EULA5	2-5	---	2-5	---	---	2-5
Wyoming big sagebrush	ARTRW*	---	15-20	---	---	15-20	---
Black sagebrush	ARARN	---	---	---	25-35	---	---
Other shrubs	SSSS	2-5	5-15	2-5	5-35	5-15	2-5
Range site symbol							
		O24X002N	O28B010N	O24X002N	O24X030N	O28B010N	O24X002N
Potential production (lb/acre):							
Favorable years		700	800	700	500	800	700
Normal years		450	600	450	350	600	450
Unfavorable years		300	400	300	250	400	300

## 1288--Ricert-Orovada-Tenabo association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Ricert	Orovada	Tenabo	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-10	5-15	2-10	5-15	5-15
Indian ricegrass	ORHY	5-15	20-30	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-10	2-5	2-5
Needleandthread	STCO4	1-3	10-20	1-3	---	1-3	1-3
Thurber needlegrass	STTH2	---	---	---	10-20	---	---
Tapertip hawksbeard	CRAC2	---	---	---	1-2	---	---
Globemallow	SPHAE	---	---	---	1-2	---	---
Phlox	PHLOX	---	---	---	1-2	---	---
Other perennial forbs	PPFF	2-8	2-5	2-8	---	2-8	2-8
Shadscale	ATCO	30-40	---	30-40	---	30-40	30-40
Bud sagebrush	ARSP5	20-30	---	20-30	---	20-30	20-30
Spiny hopsage	GRSP	2-5	---	2-5	5-15	2-5	2-5
Winterfat	EULA5	2-5	---	2-5	---	2-5	2-5
Wyoming big sagebrush	ARTRW*	---	15-20	---	30-35	---	---
Other shrubs	SSSS	2-5	5-15	2-5	---	2-5	2-5
Range site symbol		024X002N	028B010N	024X002N	024X020N	024X002N	024X002N
Potential production (lb/acre):							
Favorable years		700	800	700	700	700	700
Normal years		450	600	450	450	450	450
Unfavorable years		300	400	300	300	300	300

## 1289--Ricert-Blackhawk-Orovada association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Ricert	Blackhawk	Orovada	1	2	3	4
Bottlebrush squirreltail	SIHY	5-15	5-15	5-10	5-15	5-10	5-10	---
Indian ricegrass	ORHY	5-15	5-15	20-30	5-15	20-30	---	---
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	2-5	---	---
Needleandthread	STCO4	1-3	1-3	10-20	1-3	10-20	---	---
Basin wildrye	ELCI2	---	---	---	---	---	---	50-60
Western wheatgrass	AGSM	---	---	---	---	---	---	5-15
Other perennial grasses	PPGG	---	---	---	---	---	T-10	---
Perennial forbs	PPFF	2-8	2-8	2-5	2-8	2-5	2-8	2-8
Shadscale	ATCO	30-40	30-40	---	30-40	---	30-50	---
Bud sagebrush	ARSP5	20-30	20-30	---	20-30	---	5-15	---
Spiny hopsage	GRSP	2-5	2-5	---	2-5	---	---	---
Winterfat	EULA5	2-5	2-5	---	2-5	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	15-20	---	15-20	---	---
Black greasewood	SAVE4	---	---	---	---	---	15-30	2-10
Seepweed	SUAED	---	---	---	---	---	2-15	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	---	15-20
Rubber rabbitbrush	CHNA2	---	---	---	---	---	---	2-5
Other shrubs	SSSS	2-5	2-5	5-15	2-5	5-15	---	---

Range site symbol	024X002N	024X002N	028B010N	024X002N	028B010N	024X003N	024X006N
Potential production (lb/acre):							
Favorable years	700	700	800	700	800	600	1,500
Normal years	450	450	600	450	600	450	1,100
Unfavorable years	300	300	400	300	400	300	600

## 1371--Chad-Gando-Softscrabble association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Chad	Gando	Softscrabble	1	2	3	4
Bluebunch wheatgrass	AGSP	20-50	10-15	10-20	5-15	---	10-15	---
Basin wildrye	ELCI2	5-10	---	2-5	---	---	---	---
Mountain brome	BRCA5	2-15	---	---	---	---	---	---
Thurber needlegrass	STTH2	2-5	2-5	5-10	2-5	---	2-5	---
Bottlebrush squirreltail	SIHY	2-5	---	---	2-5	---	---	---
Idaho fescue	FEID	1-10	2-5	---	---	---	2-5	---
Indian ricegrass	ORHY	---	5-10	---	2-5	---	5-10	---
Pine bluegrass	POSC	---	---	2-5	5-10	---	---	---
Tufted hairgrass	DECA5	---	---	---	---	---	---	30-60
Nevada bluegrass	PONE3	---	---	---	---	---	---	5-10
Alpine timothy	PHAL2	---	---	---	---	---	---	5-10
Sedge	CAREX	---	---	---	---	---	---	5-10
Meadow barley	HOBR2	---	---	---	---	---	---	2-5
Other perennial grasses	PPGG	---	5-10	10-20	10-15	---	5-10	2-10
Tapertip hawksbeard	CRAC2	2-5	---	---	---	---	---	---
Arrowleaf balsamroot	BASA3	2-5	---	---	---	---	---	---
Sierra clover	TRWO	---	---	---	---	---	---	2-5
Cinquefoil	POTEN	---	---	---	---	---	---	2-5
Other perennial forbs	PPFF	---	5-10	5-12	10-15	---	5-10	10-20
Mountain big sagebrush	ARVA2	5-15	---	15-25	---	---	---	---
Low sagebrush	ARAR8	---	10-15	---	25-30	---	10-15	---
Black sagebrush	ARARN	---	10-15	---	---	---	10-15	---
Antelope bitterbrush	PUTR2	---	---	5-10	---	---	---	---
Utah serviceberry	AMUT	---	---	2-10	---	---	---	---
Willow	SALIX	---	---	---	---	---	---	2-5
Other shrubs	SSSS	---	5-10	5-15	10-20	---	5-10	2-5

Range site symbol	024X029N	028B034N	028B030N	028B037N	None	028B034N	025X005N
Potential production (lb/acre):							
Favorable years	1,500	600	1,100	700	---	600	2,000
Normal years	1,100	400	850	500	---	400	1,700
Unfavorable years	800	250	550	300	---	250	1,000

## 1450--Atlow-Stingdorn association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Atlow, steep	Atlow, strongly sloping	Stingdorn	1	2	3
Indian ricegrass	ORHY	10-15	10-15	5-15	---	10-15	5-15
Thurber needlegrass	STTH2	10-15	10-15	---	20-50	10-15	10-20
Bluegrass	POA++	2-10	2-10	---	---	2-10	---
Bottlebrush squirreltail	SIHY	---	---	5-15	---	---	2-10
Sandberg bluegrass	POSE	---	---	2-5	---	---	2-10
Needleandthread	STCO4	---	---	1-3	---	---	---
Bluebunch wheatgrass	AGSP	---	---	---	5-10	---	---
Other perennial grasses	PPGG	5-20	5-20	---	---	5-20	---
Globemallow	SPHAE	2-5	2-5	---	---	2-5	1-2
Balsamroot	BALSA	---	---	---	2-4	---	---
Tapertip hawksbeard	CRAC2	---	---	---	2-4	---	1-2
Phlox	PHLOX	---	---	---	---	---	1-2
Other perennial forbs	PPFF	---	---	2-8	---	---	---
Black sagebrush	ARARN	25-35	25-35	---	---	25-35	---
Shadscale	ATCO	---	---	30-40	---	---	---
Bud sagebrush	ARSP5	---	---	20-30	---	---	---
Spiny hopsage	GRSP	---	---	2-5	2-5	---	5-15
Winterfat	EULA5	---	---	2-5	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	15-20	---	30-35
Downy rabbitbrush	CHVIP	---	---	---	2-5	---	---
Other shrubs	SSSS	5-35	5-35	2-5	2-10	5-35	---

Range site symbol	024X030N	024X030N	024X002N	024X005N	024X030N	024X020N
Potential production (lb/acre):						
Favorable years	500	500	700	800	500	700
Normal years	350	350	450	600	350	450
Unfavorable years	250	250	300	400	250	300

## 1670--Wieland-Allor association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Wieland	Allor	1	2	3
Thurber needlegrass	STTH2	20-50	20-50	20-50	---	10-20
Bluebunch wheatgrass	AGSP	5-10	5-10	5-10	---	---
Basin wildrye	ELCI2	---	---	---	50-60	---
Nevada bluegrass	PONE3	---	---	---	5-15	---
Mat muhly	MURI	---	---	---	2-10	---
Sedge	CAREX	---	---	---	1-5	---
Indian ricegrass	ORHY	---	---	---	---	5-15
Bottlebrush squirreltail	SIHY	---	---	---	---	2-10
Sandberg bluegrass	POSE	---	---	---	---	2-10
Other perennial grasses	PPGG	---	---	---	15-20	---
Balsamroot	BALSA	2-4	2-4	2-4	---	---
Tapertip hawksbeard	CRAC2	2-4	2-4	2-4	---	1-2
Globemallow	SPHAE	---	---	---	---	1-2
Phlox	PHLOX	---	---	---	---	1-2
Other perennial forbs	PPFF	---	---	---	5-10	---
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	---	30-35
Downy rabbitbrush	CHVIP	2-5	2-5	2-5	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	---	5-15
Basin big sagebrush	ARTRT*	---	---	---	10-15	---
Other shrubs	SSSS	2-10	2-10	2-10	2-5	---
<hr/>						
Range site symbol		024X005N	024X005N	024X005N	025X003N	024X020N
Potential production (lb/acre):						
Favorable years		800	800	800	2,500	700
Normal years		600	600	600	1,900	450
Unfavorable years		400	400	400	1,200	300

## 1680--Zineb gravelly loam, 2 to 8 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Zineb	1	2
Thurber needlegrass	STTH2	20-50	---	20-50
Bluebunch wheatgrass	AGSP	5-10	---	5-10
Bottlebrush squirreltail	SIHY	---	5-15	---
Indian ricegrass	ORHY	---	5-15	---
Sandberg bluegrass	POSE	---	2-5	---
Needleandthread	STCO4	---	1-3	---
Balsamroot	BALSA	2-4	---	2-4
Tapertip hawksbeard	CRAC2	2-4	---	2-4
Other perennial forbs	PPFF	---	2-8	---
Wyoming big sagebrush	ARTRW*	15-20	---	15-20
Downy rabbitbrush	CHVIP	2-5	---	2-5
Spiny hopsage	GRSP	2-5	2-5	2-5
Shadscale	ATCO	---	30-40	---
Bud sagebrush	ARSP5	---	20-30	---
Winterfat	EULA5	---	2-5	---
Other shrubs	SSSS	2-10	2-5	2-10

Range site symbol	024X005N	024X002N	024X005N
Potential production (lb/acre):			
Favorable years	800	700	800
Normal years	600	450	600
Unfavorable years	400	300	400



## 1681--Zineb-Chiara-Wieland association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Zineb	Chiara	Wieland	1	2
Thurber needlegrass	STTH2	20-50	20-50	20-50	---	10-20
Bluebunch wheatgrass	AGSP	5-10	5-10	5-10	---	---
Basin wildrye	ELCI2	---	---	---	50-60	---
Nevada bluegrass	PONE3	---	---	---	5-15	---
Mat muhly	MURI	---	---	---	2-10	---
Sedge	CAREX	---	---	---	1-5	---
Indian ricegrass	ORHY	---	---	---	---	5-15
Bottlebrush squirreltail	SIHY	---	---	---	---	2-10
Sandberg bluegrass	POSE	---	---	---	---	2-10
Other perennial grasses	PPGG	---	---	---	15-20	---
Balsamroot	BALSA	2-4	2-4	2-4	---	---
Tapertip hawksbeard	CRAC2	2-4	2-4	2-4	---	1-2
Globemallow	SPHAE	---	---	---	---	1-2
Phlox	PHLOX	---	---	---	---	1-2
Other perennial forbs	PPFF	---	---	---	5-10	---
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	---	30-35
Downy rabbitbrush	CHVIP	2-5	2-5	2-5	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	---	5-15
Basin big sagebrush	ARTRT*	---	---	---	10-15	---
Other shrubs	SSSS	2-10	2-10	2-10	2-5	---

Range site symbol	024X005N	024X005N	024X005N	025X003N	024X020N
Potential production (lb/acre):					
Favorable years	800	800	800	2,500	700
Normal years	600	600	600	1,900	450
Unfavorable years	400	400	400	1,200	300

## 1682--Zineb-Orovada association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Zineb	Orovada	1	2	3
Indian ricegrass	ORHY	20-30	20-30	---	20-30	20-30
Needleandthread	STCO4	10-20	10-20	---	10-20	10-20
Bottlebrush squirreltail	SIHY	5-10	5-10	---	5-10	5-10
Sandberg bluegrass	POSE	2-5	2-5	---	2-5	2-5
Basin wildrye	ELCI2	---	---	30-50	---	---
Nevada bluegrass	PONE3	---	---	2-5	---	---
Western wheatgrass	AGSM	---	---	2-5	---	---
Other perennial grasses	PPGG	---	---	15-25	---	---
Perennial forbs	PPFF	2-5	2-5	2-5	2-5	2-5
Wyoming big sagebrush	ARTRW*	15-20	15-20	---	15-20	15-20
Basin big sagebrush	ARTRT*	---	---	5-10	---	---
Other shrubs	SSSS	5-15	5-15	5-10	5-15	5-15

Range site symbol	O28B010N	O28B010N	O28B003N	O28B010N	O28B010N
Potential production (lb/acre):					
Favorable years	800	800	2,600	800	800
Normal years	600	600	1,250	600	600
Unfavorable years	400	400	800	400	400

## 2003--Unius-Orovada association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Unius	Orovada	1	2	3
Indian ricegrass	ORHY	15-25	20-30	20-30	2-5	5-15
Needleandthread	STCO4	5-10	10-20	10-20	2-5	5-10
Basin wildrye	ELCI2	2-5	---	---	10-20	---
Bluebunch wheatgrass	AGSP	2-5	---	---	---	---
Bottlebrush squirreltail	SIHY	---	5-10	5-10	2-5	2-5
Sandberg bluegrass	POSE	---	2-5	2-5	---	---
Other perennial grasses	PPGG	---	---	---	5-10	5-10
Perennial forbs	PPFF	5-10	2-5	2-5	5-10	5-10
Black sagebrush	ARARN	20-30	---	---	---	---
Winterfat	EULA5	5-10	---	---	---	2-5
Bud sagebrush	ARSP5	2-5	---	---	---	5-10
Small rabbitbrush	CHVIS	2-5	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	15-20	15-20	---	---
Basin big sagebrush	ARTRT*	---	---	---	10-15	---
Greene rabbitbrush	CHGR6	---	---	---	2-5	---
Nevada ephedra	EPNE	---	---	---	2-5	---
Fourwing saltbush	ATCA2	---	---	---	2-5	2-5
Shadscale	ATCO	---	---	---	---	30-40
Other shrubs	SSSS	---	5-15	5-15	5-10	5-15

Range site symbol	028B011N	028B010N	028B010N	028B009N	028B017N
Potential production (lb/acre):					
Favorable years	950	800	800	700	700
Normal years	700	600	600	400	500
Unfavorable years	400	400	400	300	250

## 2010--Glyphs-Silverado association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Glyphs	Silverado	1	2	3
Indian ricegrass	ORHY	20-30	20-30	20-30	20-30	2-5
Needleandthread	STCO4	10-20	10-20	10-20	10-20	2-5
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	5-10	2-5
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	---
Basin wildrye	ELCI2	---	---	---	---	10-20
Other perennial grasses	PPGG	---	---	---	---	5-10
Perennial forbs	PPFF	2-5	2-5	2-5	2-5	5-10
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	15-20	---
Basin big sagebrush	ARTRT*	---	---	---	---	0-15
Greene rabbitbrush	CHGR6	---	---	---	---	2-5
Nevada ephedra	EPNE	---	---	---	---	2-5
Fourwing saltbush	ATCA2	---	---	---	---	2-5
Other shrubs	SSSS	5-15	5-15	5-15	5-15	5-10

Range site symbol	O28B010N	O28B010N	O28B010N	O28B010N	O28B009N
Potential production (lb/acre):					
Favorable years	800	800	800	800	700
Normal years	600	600	600	600	400
Unfavorable years	400	400	400	400	300

## 2011--Glyphs-Muni association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name		Inclusion number--			
		Glyphs	Muni	1	2	3	4
Indian ricegrass	ORHY	20-30	20-30	20-30	---	15-25	---
Needleandthread	STC04	10-20	10-20	10-20	---	5-10	---
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	---	---	---
Sandberg bluegrass	POSE	2-5	2-5	2-5	---	---	---
Basin wildrye	ELCI2	---	---	---	30-50	2-5	2-5
Nevada bluegrass	PONE3	---	---	---	2-5	---	20-30
Western wheatgrass	AGSM	---	---	---	2-5	---	---
Bluebunch wheatgrass	AGSP	---	---	---	---	2-5	---
Baltic rush	JUBA	---	---	---	---	---	10-15
Sedge	CAREX	---	---	---	---	---	5-15
Other perennial grasses	PPGG	---	---	---	15-25	---	10-20
Perennial forbs	PPFF	2-5	2-5	2-5	2-5	5-10	5-10
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	5-10	---	---
Black sagebrush	ARARN	---	---	---	---	20-30	---
Winterfat	EULA5	---	---	---	---	5-10	---
Bud sagebrush	ARSP5	---	---	---	---	2-5	---
Small rabbitbrush	CHVIS	---	---	---	---	2-5	---
Other shrubs	SSSS	5-15	5-15	5-15	5-10	---	---

Range site symbol	028B010N	028B010N	028B010N	028B003N	028B011N	028B001N
Potential production (lb/acre):						
Favorable years	800	800	800	2,600	950	4,000
Normal years	600	600	600	1,250	700	2,000
Unfavorable years	400	400	400	800	400	1,200

## 2012--Glyphs-Muni-Orovada association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Glyphs	Muni	Orovada	1	2
Indian ricegrass	ORHY	20-30	20-30	20-30	10-30	---
Needleandthread	STCO4	10-20	10-20	10-20	---	---
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	5-10	---
Sandberg bluegrass	POSE	2-5	2-5	2-5	---	---
Basin wildrye	ELCI2	---	---	---	---	30-50
Nevada bluegrass	PONE3	---	---	---	---	2-5
Western wheatgrass	AGSM	---	---	---	---	2-5
Other perennial grasses	PPGG	---	---	---	10-20	15-25
Perennial forbs	PPFF	2-5	2-5	2-5	5-15	2-5
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	10-25	---
Downy rabbitbrush	CHVIP	---	---	---	1-5	---
Spiny hopsage	GRSP	---	---	---	1-5	---
Antelope bitterbrush	PUTR2	---	---	---	1-5	---
Black sagebrush	ARARN	---	---	---	5-15	---
Purple sage	SADOC2	---	---	---	T-5	---
Basin big sagebrush	ARTRT*	---	---	---	---	5-10
Other shrubs	SSSS	5-15	5-15	5-15	2-4	5-10

Range site symbol	028B010N	028B010N	028B010N	025X025N	028B003N
Potential production (lb/acre):					
Favorable years	800	800	800	200	2,600
Normal years	600	600	600	150	1,250
Unfavorable years	400	400	400	100	800

## 2015--Glyphs-Enko association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Glyphs, gently sloping	Glyphs, moderately steep	Enko	1	2	3
Indian ricegrass	ORHY	20-30	20-30	10-20	20-30	20-30	5-15
Needleandthread	STC04	10-20	10-20	20-30	10-20	10-20	5-15
Bottlebrush squirreltail	SIHY	5-10	5-10	2-5	5-10	5-10	---
Sandberg bluegrass	POSE	2-5	2-5	---	2-5	2-5	---
Thickspike wheatgrass	AGDA	---	---	2-10	---	---	---
Basin wildrye	ELCI2	---	---	---	---	---	5-10
Sand dropseed	SPCR	---	---	---	---	---	5-10
Other perennial grasses	PPGG	---	---	2-5	---	---	10-15
Perennial forbs	PPFF	2-5	2-5	10-20	2-5	2-5	5-10
Wyoming big sagebrush	ARTRW*	15-20	15-20	---	15-20	15-20	5-15
Big sagebrush	ARTR2	---	---	10-20	---	---	---
Spiny hopsage	GRSP	---	---	T-5	---	---	5-10
Fourwing saltbush	ATCA2	---	---	---	---	---	2-5
Winterfat	EULA5	---	---	---	---	---	2-5
Other shrubs	SSSS	5-15	5-15	2-10	5-15	5-15	---

Range site symbol	028B010N	028B010N	024X017N	028B010N	028B010N	028B005N
Potential production (lb/acre):						
Favorable years	800	800	900	800	800	800
Normal years	600	600	700	600	600	600
Unfavorable years	400	400	500	400	400	400

## 2021--Rotinom-Wholan association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Rotinom	Wholan	Wholan, alkaline	1	2	3
Indian ricegrass	ORHY	5-15	15-25	10-30	---	2-5	20-30
Needleandthread	STCO4	5-10	---	---	---	2-5	10-20
Bottlebrush squirreltail	SIHY	2-5	2-5	5-10	---	2-5	5-10
Alkali sacaton	SPAI	---	---	T-5	---	---	---
Basin wildrye	ELCI2	---	---	---	30-50	10-20	---
Nevada bluegrass	PONE3	---	---	---	2-5	---	---
Western wheatgrass	AGSM	---	---	---	2-5	---	---
Sandberg bluegrass	POSE	---	---	---	---	---	2-5
Other perennial grasses	PPGG	5-10	5-10	---	15-25	5-10	---
Perennial forbs	PPFF	5-10	5-10	T-5	2-5	5-10	2-5
Shadscale	ATCO	30-40	---	---	---	---	---
Bud sagebrush	ARSP5	5-10	---	---	---	---	---
Winterfat	EULA5	2-5	30-45	---	---	---	---
Fourwing saltbush	ATCA2	2-5	---	---	---	2-5	---
Sickle saltbush	ATFA	---	---	50-65	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	5-10	10-15	---
Greene rabbitbrush	CHGR6	---	---	---	---	2-5	---
Nevada ephedra	EPNE	---	---	---	---	2-5	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	---	15-20
Other shrubs	SSSS	5-15	5-15	---	5-10	5-10	5-15

Range site symbol	O28B017N	O28B013N	O24X012N	O28B003N	O28B009N	O28B010N
Potential production (lb/acre):						
Favorable years	700	800	700	2,600	700	800
Normal years	500	550	400	1,250	400	600
Unfavorable years	250	300	200	800	300	400



## 2022--Rotinom-Orovada association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Rotinom	Orovada	1	2	3
Indian ricegrass	ORHY	5-15	20-30	20-30	2-5	20-30
Needleandthread	STCO4	5-10	10-20	10-20	2-5	10-20
Bottlebrush squirreltail	SIHY	2-5	5-10	5-10	2-5	5-10
Sandberg bluegrass	POSE	---	2-5	2-5	---	2-5
Basin wildrye	ELCI2	---	---	---	10-20	---
Other perennial grasses	PPGG	5-10	---	---	5-10	---
Perennial forbs	PPFF	5-10	2-5	2-5	5-10	2-5
Shadscale	ATCO	30-40	---	---	---	---
Bud sagebrush	ARSP5	5-10	---	---	---	---
Winterfat	EULA5	2-5	---	---	---	---
Fourwing saltbush	ATCA2	2-5	---	---	2-5	---
Wyoming big sagebrush	ARTRW*	---	15-20	15-20	---	15-20
Basin big sagebrush	ARTRT*	---	---	---	10-15	---
Greene rabbitbrush	CHGR6	---	---	---	2-5	---
Nevada ephedra	EPNE	---	---	---	2-5	---
Other shrubs	SSSS	5-15	5-15	5-15	5-10	5-15
<hr/>						
Range site symbol		028B017N	028B010N	028B010N	028B009N	028B010N
Potential production (lb/acre):						
Favorable years		700	800	800	700	800
Normal years		500	600	600	400	600
Unfavorable years		250	400	400	300	400

## 2031--Muni-Orovada-Unius association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Muni	Orovada	Unius	1	2	3
Indian ricegrass	ORHY	20-30	20-30	15-25	15-25	15-30	5-15
Needleandthread	STCO4	10-20	10-20	5-10	---	---	5-15
Bottlebrush squirreltail	SIHY	5-10	5-10	---	2-5	---	---
Sandberg bluegrass	POSE	2-5	2-5	---	---	---	---
Basin wildrye	ELCI2	---	---	2-5	---	---	5-10
Bluebunch wheatgrass	AGSP	---	---	2-5	---	---	---
Thurber needlegrass	STTH2	---	---	---	---	5-10	---
Sand dropseed	SPCR	---	---	---	---	---	5-10
Other perennial grasses	PPGG	---	---	---	5-10	5-15	10-15
Globemallow	SPHAE	---	---	---	---	2-4	---
Other perennial forbs	PPFF	2-5	2-5	5-10	5-10	---	5-10
Wyoming big sagebrush	ARTRW*	15-20	15-20	---	---	15-30	5-15
Black sagebrush	ARARN	---	---	20-30	---	---	---
Winterfat	EULA5	---	---	5-10	30-45	---	2-5
Bud sagebrush	ARSP5	---	---	2-5	---	---	---
Small rabbitbrush	CHVIS	---	---	2-5	---	---	---
Spiny hopsage	GRSP	---	---	---	---	2-5	5-10
Shadscale	ATCO	---	---	---	---	2-5	---
Fourwing saltbush	ATCA2	---	---	---	---	---	2-5
Other shrubs	SSSS	5-15	5-15	---	5-15	2-5	---

Range site symbol	028B010N	028B010N	028B011N	028B013N	024X045N	028B005N
Potential production (lb/acre):						
Favorable years	800	800	950	800	350	800
Normal years	600	600	700	550	200	600
Unfavorable years	400	400	400	300	100	400

## 2060--Oxcorel-Beoska-Whirlo association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Oxcorel	Beoska	Whirlo	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	2-10	5-10	---
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	---	---
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-10	---	---
Needleandthread	STCO4	1-3	1-3	1-3	---	---	---
Thurber needlegrass	STTH2	---	---	---	10-20	---	20-50
Bluebunch wheatgrass	AGSP	---	---	---	---	---	5-10
Other perennial grasses	PPGG	---	---	---	---	T-10	---
Tapertip hawksbeard	CRAC2	---	---	---	1-2	---	2-4
Globemallow	SPHAE	---	---	---	1-2	---	---
Phlox	PHLOX	---	---	---	1-2	---	---
Balsamroot	BALSA	---	---	---	---	---	2-4
Other perennial forbs	PPFF	2-8	2-8	2-8	---	2-8	---
Shadscale	ATCO	30-40	30-40	30-40	---	30-50	---
Bud sagebrush	ARSP5	20-30	20-30	20-30	---	5-15	---
Spiny hopsage	GRSP	2-5	2-5	2-5	5-15	---	2-5
Winterfat	EULA5	2-5	2-5	2-5	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	30-35	---	15-20
Black greasewood	SAVE4	---	---	---	---	15-30	---
Seepweed	SUAED	---	---	---	---	2-15	---
Downy rabbitbrush	CHVIP	---	---	---	---	---	2-5
Other shrubs	SSSS	2-5	2-5	2-5	---	---	2-10

Range site symbol	024X002N	024X002N	024X002N	024X020N	024X003N	024X005N
Potential production (lb/acre):						
Favorable years	700	700	700	700	600	800
Normal years	450	450	450	450	450	600
Unfavorable years	300	300	300	300	300	400

## 2061--Oxcorel-Zaidy-Grassval association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Oxcorel	Zaidy	Grassval	1	2	3
Indian ricegrass	ORHY	5-15	15-25	15-25	20-30	15-25	20-30
Needleandthread	STC04	5-10	5-10	5-10	10-20	---	10-20
Bottlebrush squirreltail	SIHY	2-5	---	---	5-10	2-5	5-10
Basin wildrye	ELCI2	---	2-5	2-5	---	---	---
Bluebunch wheatgrass	AGSP	---	2-5	2-5	---	---	---
Sandberg bluegrass	POSE	---	---	---	2-5	---	2-5
Thurber needlegrass	STTH2	---	---	---	---	5-10	---
Other perennial grasses	PPGG	5-10	---	---	---	---	---
Scarlet globemallow	SPC0	---	---	---	---	2-5	---
Other perennial forbs	PPFF	5-10	5-10	5-10	2-5	---	2-5
Shadscale	ATC0	30-40	---	---	---	---	---
Bud sagebrush	ARSP5	5-10	2-5	2-5	---	5-10	---
Winterfat	EULA5	2-5	5-10	5-10	---	---	---
Fourwing saltbush	ATCA2	2-5	---	---	---	---	---
Black sagebrush	ARARN	---	20-30	20-30	---	---	---
Small rabbitbrush	CHVIS	---	2-5	2-5	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	15-20	15-25	15-20
Spiny hopsage	GRSP	---	---	---	---	20-30	---
Other shrubs	SSSS	5-15	---	---	5-15	5-10	5-15

Range site symbol	028B017N	028B011N	028B011N	028B010N	028B052N	028B010N
Potential production (lb/acre):						
Favorable years	700	950	950	800	600	800
Normal years	500	700	700	600	400	600
Unfavorable years	250	400	400	400	300	400

## 2063--Oxcorel-Pineval association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Oxcorel	Pineval, moderately steep	Pineval, strongly sloping	1	2	3	4
Bottlebrush squirreltail	SIHY	5-15	5-10	5-10	---	2-10	---	---
Indian ricegrass	ORHY	5-15	20-30	20-30	---	5-15	15-30	---
Sandberg bluegrass	POSE	2-5	2-5	2-5	---	2-10	---	---
Needleandthread	STC04	1-3	10-20	10-20	---	---	---	---
Thurber needlegrass	STTH2	---	---	---	20-50	10-20	5-10	20-50
Bluebunch wheatgrass	AGSP	---	---	---	5-10	---	---	5-10
Other perennial grasses	PPGG	---	---	---	---	---	5-15	---
Balsamroot	BALSA	---	---	---	2-4	---	---	2-4
Tapertip hawksbeard	CRAC2	---	---	---	2-4	1-2	---	2-4
Globemallow	SPHAE	---	---	---	---	1-2	2-4	---
Phlox	PHLOX	---	---	---	---	1-2	---	---
Other perennial forbs	PPFF	2-8	2-5	2-5	---	---	---	---
Shadscale	ATCO	30-40	---	---	---	---	2-5	---
Bud sagebrush	ARSP5	20-30	---	---	---	---	---	---
Spiny hopsage	GRSP	2-5	---	---	2-5	5-15	2-5	2-5
Winterfat	EULA5	2-5	---	---	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	15-20	15-20	15-20	30-35	15-30	15-20
Downy rabbitbrush	CHVIP	---	---	---	2-5	---	---	2-5
Other shrubs	SSSS	2-5	5-15	5-15	2-10	---	2-5	2-10

Range site symbol	024X002N	028B010N	028B010N	024X005N	024X020N	024X045N	024X005N
Potential production (lb/acre):							
Favorable years	700	800	800	800	700	350	800
Normal years	450	600	600	600	450	200	600
Unfavorable years	300	400	400	400	300	100	400

## 2069--Oxcorel-Wieland-Spasprey association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Oxcorel	Wieland	Spasprey	1	2	3
Bottlebrush squirreltail	SIHY	5-15	---	---	2-10	5-15	5-15
Indian ricegrass	ORHY	5-15	---	---	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	---	---	2-10	2-5	2-5
Needleandthread	STCO4	1-3	---	---	---	1-3	1-3
Thurber needlegrass	STTH2	---	20-50	20-50	10-20	---	---
Bluebunch wheatgrass	AGSP	---	5-10	5-10	---	---	---
Balsamroot	BALSA	---	2-4	2-4	---	---	---
Tapertip hawksbeard	CRAC2	---	2-4	2-4	1-2	---	---
Globemallow	SPHAE	---	---	---	1-2	---	---
Phlox	PHLOX	---	---	---	1-2	---	---
Other perennial forbs	PPFF	2-8	---	---	---	2-8	2-8
Shadscale	ATCO	30-40	---	---	---	30-40	30-40
Bud sagebrush	ARSP5	20-30	---	---	---	20-30	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5	5-15	2-5	2-5
Winterfat	EULA5	2-5	---	---	---	2-5	2-5
Wyoming big sagebrush	ARTRW*	---	15-20	15-20	30-35	---	---
Downy rabbitbrush	CHVIP	---	2-5	2-5	---	---	---
Other shrubs	SSSS	2-5	2-10	2-10	---	2-5	2-5

Range site symbol	O24X002N	O24X005N	O24X005N	O24X020N	O24X002N	O24X002N
Potential production (lb/acre):						
Favorable years	700	800	800	700	700	700
Normal years	450	600	600	450	450	450
Unfavorable years	300	400	400	300	300	300

## 2081--Fenster-Jesse Camp association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Fenster	Jesse Camp	1	2	3
Indian ricegrass	ORHY	5-15	2-5	20-30	---	---
Needleandthread	STCO4	5-10	2-5	10-20	---	---
Bottlebrush squirreltail	SIHY	2-5	2-5	5-10	5-10	---
Basin wildrye	ELCI2	---	10-20	---	---	5-15
Sandberg bluegrass	POSE	---	---	2-5	---	---
Alkali sacaton	SPAI	---	---	---	---	20-30
Inland saltgrass	DISPS2	---	---	---	---	5-10
Other perennial grasses	PPGG	5-10	5-10	---	T-10	10-20
Perennial forbs	PPFF	5-10	5-10	2-5	2-8	5-10
Shadscale	ATCO	30-40	---	---	30-50	---
Bud sagebrush	ARSP5	5-10	---	---	5-15	---
Winterfat	EULA5	2-5	---	---	---	---
Fourwing saltbush	ATCA2	2-5	2-5	---	---	2-5
Basin big sagebrush	ARTRT*	---	10-15	---	---	2-5
Greene rabbitbrush	CHGR6	---	2-5	---	---	---
Nevada ephedra	EPNE	---	2-5	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	15-20	---	---
Black greasewood	SAVE4	---	---	---	15-30	5-10
Seepweed	SUAED	---	---	---	2-15	---
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5
Other shrubs	SSSS	5-15	5-10	5-15	---	2-5

Range site symbol	028B017N	028B009N	028B010N	024X003N	028B004N
Potential production (lb/acre):					
Favorable years	700	700	800	600	2,000
Normal years	500	400	600	450	1,000
Unfavorable years	250	300	400	300	500

## 2088--Punchbowl-Jung-Teguro association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Punchbowl	Jung	Teguro	1	2	3	4
Indian ricegrass	ORHY	5-15	5-15	---	10-15	5-15	---	---
Needleandthread	STCO4	5-15	5-15	---	---	1-3	---	---
Pine bluegrass	POSC	2-5	2-5	---	---	---	2-5	---
Bluebunch wheatgrass	AGSP	1-3	1-3	X	---	---	---	---
Basin wildrye	ELCI2	---	---	X	---	---	---	---
Thurber needlegrass	STTH2	---	---	X	10-15	---	---	---
Nevada bluegrass	PONE3	---	---	X	---	---	---	---
Idaho fescue	FEID	---	---	X	---	---	10-20	---
Bluegrass	POA++	---	---	---	2-10	---	---	---
Bottlebrush squirreltail	SIHY	---	---	---	---	5-15	5-10	---
Sandberg bluegrass	POSE	---	---	---	---	2-5	2-5	---
Webber ricegrass	STWE	---	---	---	---	---	5-10	---
Cusick bluegrass	POCU3	---	---	---	---	---	2-5	---
Other perennial grasses	PPGG	5-10	5-10	---	5-20	---	---	---
Tapertip hawksbeard	CRAC2	---	---	X	---	---	---	---
Arrowleaf balsamroot	BASA3	---	---	X	---	---	---	---
Globeamallow	SPHAE	---	---	---	2-5	---	---	---
Goldenweed	HAPLO2	---	---	---	---	---	2-5	---
Phlox	PHLOX	---	---	---	---	---	2-5	---
Other perennial forbs	PPFF	5-15	5-15	---	---	2-8	---	---
Black sagebrush	ARARN	20-25	20-25	---	25-35	---	5-15	---
Fourwing saltbush	ATCA2	2-5	2-5	---	---	---	---	---
Bud sagebrush	ARSP5	2-5	2-5	---	---	20-30	---	---
Big sagebrush	ARTR2	---	---	X	---	---	---	---
Snowberry	SYMPH	---	---	X	---	---	---	---
Currant	RIBES	---	---	X	---	---	---	---
Shadscale	ATCO	---	---	---	---	30-40	---	---
Spiny hopsage	GRSP	---	---	---	---	2-5	---	---
Winterfat	EULA5	---	---	---	---	2-5	---	---
Low sagebrush	ARAR8	---	---	---	---	---	5-15	---
Mountain big sagebrush	ARVA2	---	---	---	---	---	1-5	---
Other shrubs	SSSS	10-20	10-20	---	5-35	2-5	---	---
Singleleaf pinyon	PIMO	---	---	X	---	---	---	---
Utah juniper	JUOS	---	---	X	---	---	---	---

Range site symbol	028B016N	028B016N	---	024X030N	024X002N	024X016N	None
Woodland site symbol	---	---	025X062N	---	---	---	None
Potential production (lb/acre):							
Favorable years	500	500	500	500	700	350	---
Normal years	250	250	350	350	450	250	---
Unfavorable years	150	150	200	250	300	150	---



## 2089--Punchbowl-Jung-Locane association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Punchbowl	Jung	Locane	1	2	3
Indian ricegrass	ORHY	5-15	5-15	20-30	---	20-30	5-15
Needleandthread	STCO4	5-15	5-15	10-20	---	10-20	5-10
Pine bluegrass	POSC	2-5	2-5	---	---	---	---
Bluebunch wheatgrass	AGSP	1-3	1-3	---	---	---	---
Bottlebrush squirreltail	SIHY	---	---	5-10	---	5-10	2-5
Sandberg bluegrass	POSE	---	---	2-5	---	2-5	---
Other perennial grasses	PPGG	5-10	5-10	---	---	---	5-10
Perennial forbs	PPFF	5-15	5-15	2-5	---	2-5	5-10
Black sagebrush	ARARN	20-25	20-25	---	---	---	---
Fourwing saltbush	ATCA2	2-5	2-5	---	---	---	2-5
Bud sagebrush	ARSP5	2-5	2-5	---	---	---	5-10
Wyoming big sagebrush	ARTRW*	---	---	15-20	---	15-20	---
Shadscale	ATCO	---	---	---	---	---	30-40
Winterfat	EULA5	---	---	---	---	---	2-5
Other shrubs	SSSS	10-20	10-20	5-15	---	5-15	5-15

Range site symbol	028B016N	028B016N	028B010N	None	028B010N	028B017N
Potential production (lb/acre):						
Favorable years	500	500	800	---	800	700
Normal years	250	250	600	---	600	500
Unfavorable years	150	150	400	---	400	250

## 2090--Punchbowl gravelly loam, 4 to 15 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Punchbowl	1	2	3
Indian ricegrass	ORHY	5-15	---	5-10	---
Needleandthread	STC04	5-15	---	---	---
Pine bluegrass	POSC	2-5	2-5	---	---
Bluebunch wheatgrass	AGSP	1-3	10-20	2-5	---
Thurber needlegrass	STTH2	---	5-10	5-15	---
Basin wildrye	ELCI2	---	2-5	---	---
Sandberg bluegrass	POSE	---	---	5-10	---
Bottlebrush squirreltail	SIHY	---	---	2-5	---
Other perennial grasses	PPGG	5-10	10-20	---	---
Perennial forbs	PPFF	5-15	5-12	5-10	---
Black sagebrush	ARARN	20-25	---	---	---
Fourwing saltbush	ATCA2	2-5	---	---	---
Bud sagebrush	ARSP5	2-5	---	---	---
Mountain big sagebrush	ARVA2	---	15-25	---	---
Antelope bitterbrush	PUTR2	---	5-10	---	---
Utah serviceberry	AMUT	---	2-10	---	---
Low sagebrush	ARAR8	---	---	25-30	---
Other shrubs	SSSS	10-20	5-15	10-15	---

Range site symbol	028B016N	028B030N	028B045N	None
Potential production (lb/acre):				
Favorable years	500	1,100	800	---
Normal years	250	850	600	---
Unfavorable years	150	550	400	---

## 2091--Punchbowl-Teguro-Sumine association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Punchbowl	Teguro	Sumine	1	2	3
Indian ricegrass	ORHY	10-15	---	---	---	---	---
Thurber needlegrass	STTH2	10-15	X	2-5	---	---	---
Bluegrass	POA++	2-10	---	---	---	---	---
Bluebunch wheatgrass	AGSP	---	X	20-50	---	5-10	---
Basin wildrye	ELCI2	---	X	5-10	---	---	30-50
Nevada bluegrass	PONE3	---	X	---	---	---	2-5
Idaho fescue	FEID	---	X	1-10	---	30-60	---
Mountain brome	BRCA5	---	---	2-15	---	2-5	---
Bottlebrush squirreltail	SIHY	---	---	2-5	---	---	---
Cusick bluegrass	POCU3	---	---	---	---	5-10	---
Sedge	CAREX	---	---	---	---	2-5	---
Western wheatgrass	AGSM	---	---	---	---	---	2-5
Other perennial grasses	PPGG	5-20	---	---	---	---	15-25
Globemallow	SPHAE	2-5	---	---	---	---	---
Tapertip hawksbeard	CRAC2	---	X	2-5	---	1-3	---
Arrowleaf balsamroot	BASA3	---	X	2-5	---	---	---
Lupine	LUPIN	---	---	---	---	1-2	---
Other perennial forbs	PPFF	---	---	---	---	---	2-5
Black sagebrush	ARARN	25-35	---	---	---	---	---
Big sagebrush	ARTR2	---	X	---	---	---	---
Snowberry	SYMPH	---	X	---	---	2-5	---
Currant	RIBES	---	X	---	---	---	---
Mountain big sagebrush	ARVA2	---	---	5-15	---	5-15	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	5-10
Other shrubs	SSSS	5-35	---	---	---	---	5-10
Singleleaf pinyon	PIMO	---	X	---	---	---	---
Utah juniper	JUOS	---	X	---	---	---	---
Range site symbol		024X030N	---	024X029N	None	024X023N	028B003N
Woodland site symbol		---	025X062N	---	None	---	---
Potential production (lb/acre):							
Favorable years		500	500	1,500	---	1,500	2,600
Normal years		350	350	1,100	---	1,200	1,250
Unfavorable years		250	200	800	---	900	800

## 2092--Punchbowl-Belate-Reluctan association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Punchbowl	Belate	Reluctan	1	2	3	4
Indian ricegrass	ORHY	5-15	---	---	---	5-15	---	---
Needleandthread	STCO4	5-15	---	---	---	5-15	---	---
Pine bluegrass	POSC	2-5	---	---	---	2-5	---	---
Bluebunch wheatgrass	AGSP	1-3	15-30	20-30	---	1-3	---	---
Idaho fescue	FEID	---	25-50	20-40	---	---	---	---
Thurber needlegrass	STTH2	---	2-10	2-10	---	---	---	---
Spike fescue	LEKI2	---	2-10	---	---	---	---	---
Basin wildrye	ELCI2	---	---	2-15	---	---	30-50	---
Nevada bluegrass	PONE3	---	---	---	---	---	2-5	---
Western wheatgrass	AGSM	---	---	---	---	---	2-5	---
Other perennial grasses	PPGG	5-10	---	---	---	5-10	15-25	---
Balsamroot	BALSA	---	2-5	---	---	---	---	---
Tapertip hawksbeard	CRAC2	---	---	1-5	---	---	---	---
Arrowleaf balsamroot	BASA3	---	---	1-5	---	---	---	---
Other perennial forbs	PPFF	5-15	---	---	---	5-15	2-5	---
Black sagebrush	ARARN	20-25	---	---	---	20-25	---	---
Fourwing saltbush	ATCA2	2-5	---	---	---	2-5	---	---
Bud sagebrush	ARSP5	2-5	---	---	---	2-5	---	---
Low sagebrush	ARAR8	---	10-20	---	---	---	---	---
Douglas rabbitbrush	CHVI8	---	2-5	---	---	---	---	---
Mountain big sagebrush	ARVA2	---	---	5-15	---	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	5-10	---
Other shrubs	SSSS	10-20	---	---	---	10-20	5-10	---

Range site symbol	028B016N	024X027N	024X021N	None	028B016N	028B003N	None
Potential production (lb/acre):							
Favorable years	500	1,200	1,400	---	500	2,600	---
Normal years	250	800	1,000	---	250	1,250	---
Unfavorable years	150	600	700	---	150	800	---

## 2093--Punchbowl-Rock outcrop association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Punchbowl	Rock outcrop	1	2	3
Indian ricegrass	ORHY	5-15	---	---	5-15	20-30
Needleandthread	STCO4	5-15	---	---	5-15	10-20
Pine bluegrass	POSC	2-5	---	---	2-5	---
Bluebunch wheatgrass	AGSP	1-3	---	X	1-3	---
Basin wildrye	ELCI2	---	---	X	---	---
Thurber needlegrass	STTH2	---	---	X	---	---
Nevada bluegrass	PONE3	---	---	X	---	---
Idaho fescue	FEID	---	---	X	---	---
Bottlebrush squirreltail	SIHY	---	---	---	---	5-10
Sandberg bluegrass	POSE	---	---	---	---	2-5
Other perennial grasses	PPGG	5-10	---	---	5-10	---
Tapertip hawksbeard	CRAC2	---	---	X	---	---
Arrowleaf balsamroot	BASA3	---	---	X	---	---
Other perennial forbs	PPFF	5-15	---	---	5-15	2-5
Black sagebrush	ARARN	20-25	---	---	20-25	---
Fourwing saltbush	ATCA2	2-5	---	---	2-5	---
Bud sagebrush	ARSP5	2-5	---	---	2-5	---
Big sagebrush	ARTR2	---	---	X	---	---
Snowberry	SYMPH	---	---	X	---	---
Currant	RIBES	---	---	X	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	15-20
Other shrubs	SSSS	10-20	---	---	10-20	5-15
Singleleaf pinyon	PIMO	---	---	X	---	---
Utah juniper	JUOS	---	---	X	---	---
Range site symbol		028B016N	None	---	028B016N	028B010N
Woodland site symbol		---	None	025X062N	---	---
Potential production (lb/acre):						
Favorable years		500	---	500	500	800
Normal years		250	---	350	250	600
Unfavorable years		150	---	200	150	400

## 2094--Punchbowl-Simpark-Akerue association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Punchbowl	Simpark	Akerue	1	2	3
Indian ricegrass	ORHY	5-15	5-15	5-15	20-30	---	5-15
Needleandthread	STC04	5-15	5-15	5-15	10-20	---	1-3
Pine bluegrass	POSC	2-5	2-5	2-5	---	---	---
Bluebunch wheatgrass	AGSP	1-3	1-3	1-3	---	---	---
Bottlebrush squirreltail	SIHY	---	---	---	5-10	---	5-15
Sandberg bluegrass	POSE	---	---	---	2-5	---	2-5
Other perennial grasses	PPGG	5-10	5-10	5-10	---	---	---
Perennial forbs	PPFF	5-15	5-15	5-15	2-5	---	2-8
Black sagebrush	ARARN	20-25	20-25	20-25	---	---	---
Fourwing saltbush	ATCA2	2-5	2-5	2-5	---	---	---
Bud sagebrush	ARSP5	2-5	2-5	2-5	---	---	20-30
Wyoming big sagebrush	ARTRW*	---	---	---	15-20	---	---
Shadscale	ATCO	---	---	---	---	---	30-40
Spiny hopsage	GRSP	---	---	---	---	---	2-5
Winterfat	EULA5	---	---	---	---	---	2-5
Other shrubs	SSSS	10-20	10-20	10-20	5-15	---	2-5
Range site symbol		028B016N	028B016N	028B016N	028B010N	None	024X002N
Potential production (lb/acre):							
Favorable years		500	500	500	800	---	700
Normal years		250	250	250	600	---	450
Unfavorable years		150	150	150	400	---	300

## 2095--Punchbowl-Robson-Rock outcrop association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Punchbowl	Robson	Rock outcrop	1	2	3
Indian ricegrass	ORHY	5-15	5-10	---	---	5-10	2-5
Needleandthread	STCO4	5-15	---	---	---	2-5	---
Pine bluegrass	POSC	2-5	---	---	---	2-5	5-10
Bluebunch wheatgrass	AGSP	1-3	2-5	---	---	5-10	5-15
Thurber needlegrass	STTH2	---	5-15	---	---	20-30	2-5
Sandberg bluegrass	POSE	---	5-10	---	---	---	---
Bottlebrush squirreltail	SIHY	---	2-5	---	---	---	2-5
Basin wildrye	ELCI2	---	---	---	30-50	---	---
Nevada bluegrass	PONE3	---	---	---	2-5	---	---
Western wheatgrass	AGSM	---	---	---	2-5	---	---
Other perennial grasses	PPGG	5-10	---	---	15-25	5-10	10-15
Perennial forbs	PPFF	5-15	5-10	---	2-5	5-10	10-15
Black sagebrush	ARARN	20-25	---	---	---	---	---
Fourwing saltbush	ATCA2	2-5	---	---	---	---	---
Bud sagebrush	ARSP5	2-5	---	---	---	---	---
Low sagebrush	ARAR8	---	25-30	---	---	---	25-30
Basin big sagebrush	ARTRT*	---	---	---	5-10	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	10-15	---
Rabbitbrush	CHRS9	---	---	---	---	2-5	---
Antelope bitterbrush	PUTR2	---	---	---	---	1-10	---
Other shrubs	SSSS	10-20	10-15	---	5-10	---	10-20

Range site symbol	028B016N	028B045N	None	028B003N	028B007N	028B037N
Potential production (lb/acre):						
Favorable years	500	800	---	2,600	1,000	700
Normal years	250	600	---	1,250	750	500
Unfavorable years	150	400	---	800	600	300

## 2096--Punchbowl-Locane-Nobuck association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Punchbowl	Locane	Nobuck	1	2	3
Indian ricegrass	ORHY	5-15	---	5-15	5-15	5-10	---
Needleandthread	STCO4	5-15	---	5-15	5-15	2-5	---
Pine bluegrass	POSC	2-5	---	2-5	2-5	2-5	---
Bluebunch wheatgrass	AGSP	1-3	5-10	1-3	1-3	5-10	---
Thurber needlegrass	STTH2	---	20-50	---	---	20-30	---
Other perennial grasses	PPGG	5-10	---	5-10	5-10	5-10	---
Balsamroot	BALSA	---	2-4	---	---	---	---
Tapertip hawksbeard	CRAC2	---	2-4	---	---	---	---
Other perennial forbs	PPFF	5-15	---	5-15	5-15	5-10	---
Black sagebrush	ARARN	20-25	---	20-25	20-25	---	---
Fourwing saltbush	ATCA2	2-5	---	2-5	2-5	---	---
Bud sagebrush	ARSP5	2-5	---	2-5	2-5	---	---
Wyoming big sagebrush	ARTRW*	---	15-20	---	---	10-15	---
Downy rabbitbrush	CHVIP	---	2-5	---	---	---	---
Spiny hopsage	GRSP	---	2-5	---	---	---	---
Rabbitbrush	CHRY59	---	---	---	---	2-5	---
Antelope bitterbrush	PUTR2	---	---	---	---	1-10	---
Other shrubs	SSSS	10-20	2-10	10-20	10-20	---	---

Range site symbol	028B016N	024X005N	028B016N	028B016N	028B007N	None
Potential production (lb/acre):						
Favorable years	500	800	500	500	1,000	---
Normal years	250	600	250	250	750	---
Unfavorable years	150	400	150	150	600	---



## 2097--Punchbowl-Itca association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Punchbowl	Itca	1	2	3
Indian ricegrass	ORHY	5-15	---	---	X	5-10
Needleandthread	STCO4	5-15	---	---	---	2-5
Pine bluegrass	POSC	2-5	---	---	---	2-5
Bluebunch wheatgrass	AGSP	1-3	X	---	X	5-10
Idaho fescue	FEID	---	X	---	---	---
Bluegrass	POA++	---	X	---	X	---
Thurber needlegrass	STTH2	---	---	---	X	20-30
Other perennial grasses	PPGG	5-10	X	---	X	5-10
Tapertip hawksbeard	CRAC2	---	X	---	X	---
Arrowleaf balsamroot	BASA3	---	X	---	X	---
Other perennial forbs	PPFF	5-15	X	---	X	5-10
Black sagebrush	ARARN	20-25	---	---	X	---
Fourwing saltbush	ATCA2	2-5	---	---	---	---
Bud sagebrush	ARSP5	2-5	---	---	---	---
Big sagebrush	ARTR2	---	X	---	---	---
Downy rabbitbrush	CHVIP	---	---	---	X	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	10-15
Rabbitbrush	CHRY9	---	---	---	---	2-5
Antelope bitterbrush	PUTR2	---	---	---	---	1-10
Other shrubs	SSSS	10-20	X	---	X	---
Singleleaf pinyon	PIMO	---	X	---	X	---
Utah juniper	JUOS	---	---	---	X	---
Range site symbol	028B016N	---	None	---	028B007N	---
Woodland site symbol	---	025X061N	None	025X063N	---	---
Potential production (lb/acre):						
Favorable years	500	500	---	400	1,000	
Normal years	250	375	---	275	750	
Unfavorable years	150	250	---	150	600	

## 2099--Punchbowl-Roca-Rock outcrop association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Punchbowl	Roca	Rock outcrop	1	2	3
Indian ricegrass	ORHY	5-15	---	---	5-15	---	---
Needleandthread	STC04	5-15	---	---	5-15	---	---
Pine bluegrass	POSC	2-5	---	---	2-5	---	---
Bluebunch wheatgrass	AGSP	1-3	40-60	---	1-3	20-30	20-30
Thurber needlegrass	STTH2	---	5-10	---	---	15-25	2-10
Bluegrass	POA++	---	2-10	---	---	---	---
Basin wildrye	ELC12	---	2-5	---	---	---	2-15
Nevada bluegrass	PONE3	---	---	---	---	2-10	---
Idaho fescue	FEID	---	---	---	---	---	20-40
Other perennial grasses	PPGG	5-10	---	---	5-10	10-15	---
Tapertip hawksbeard	CRAC2	---	2-5	---	---	2-5	1-5
Arrowleaf balsamroot	BASA3	---	2-5	---	---	2-5	1-5
Other perennial forbs	PPFF	5-15	---	---	5-15	2-5	---
Black sagebrush	ARARN	20-25	---	---	20-25	---	---
Fourwing saltbush	ATCA2	2-5	---	---	2-5	---	---
Bud sagebrush	ARSP5	2-5	---	---	2-5	---	---
Wyoming big sagebrush	ARTRW*	---	5-10	---	---	---	---
Mountain big sagebrush	ARVA2	---	T-5	---	---	---	5-15
Big sagebrush	ARTR2	---	---	---	---	10-15	---
Antelope bitterbrush	PUTR2	---	---	---	---	0-10	---
Other shrubs	SSSS	10-20	---	---	10-20	5-10	---
Range site symbol		028B016N	024X028N	None	028B016N	025X014N	024X021N
Potential production (lb/acre):							
Favorable years		500	1,000	---	500	1,000	1,400
Normal years		250	700	---	250	800	1,000
Unfavorable years		150	500	---	150	600	700

## 2100--Grassval-Grina-Unsel Variant association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Grassval	Grina	Unsel Variant	1	2	3	4
Indian ricegrass	ORHY	10-15	X	5-15	5-15	5-15	10-15	10-30
Thurber needlegrass	STTH2	10-15	X	---	---	10-20	10-15	---
Bluegrass	POA++	2-10	X	---	---	---	2-10	---
Bluebunch wheatgrass	AGSP	---	X	---	---	---	---	---
Basin wildrye	ELCI2	---	X	---	---	---	---	---
Bottlebrush squirreltail	SIHY	---	---	5-15	5-15	2-10	---	5-10
Sandberg bluegrass	POSE	---	---	2-5	2-5	2-10	---	---
Needleandthread	STCO4	---	---	1-3	1-3	---	---	---
Other perennial grasses	PPGG	5-20	---	---	---	---	5-20	10-20
Globemallow	SPHAE	2-5	---	---	---	1-2	2-5	---
Tapertip hawksbeard	CRAC2	---	X	---	---	1-2	---	---
Arrowleaf balsamroot	BASA3	---	X	---	---	---	---	---
Phlox	PHLOX	---	---	---	---	1-2	---	---
Other perennial forbs	PPFF	---	---	2-8	2-8	---	---	5-15
Black sagebrush	ARARN	25-35	---	---	---	---	25-35	5-15
Big sagebrush	ARTR2	---	X	---	---	---	---	---
Douglas rabbitbrush	CHVI8	---	X	---	---	---	---	---
Shadscale	ATCO	---	---	30-40	30-40	---	---	---
Bud sagebrush	ARSP5	---	---	20-30	20-30	---	---	---
Spiny hopsage	GRSP	---	---	2-5	2-5	5-15	---	1-5
Winterfat	EULA5	---	---	2-5	2-5	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	30-35	---	10-25
Downy rabbitbrush	CHVIP	---	---	---	---	---	---	1-5
Antelope bitterbrush	PUTR2	---	---	---	---	---	---	1-5
Purple sage	SADOC2	---	---	---	---	---	---	T-5
Other shrubs	SSSS	5-35	---	2-5	2-5	---	5-35	2-4
Utah juniper	JUOS	---	X	---	---	---	---	---
Range site symbol		024X030N	---	024X002N	024X002N	024X020N	024X030N	025X025N
Woodland site symbol		---	025X059N	---	---	---	---	---
Potential production (lb/acre):								
Favorable years		500	500	700	700	700	500	200
Normal years		350	350	450	450	450	350	150
Unfavorable years		250	200	300	300	300	250	100

## 2101--Grassval-Oxcorel association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Grassval	Oxcorel, eroded	Oxcorel	1	2	3
Indian ricegrass	ORHY	15-25	15-30	5-15	20-30	2-5	15-30
Needleandthread	STCO4	5-10	---	5-10	10-20	---	---
Basin wildrye	ELCI2	2-5	---	---	---	---	---
Bluebunch wheatgrass	AGSP	2-5	---	---	---	---	---
Thurber needlegrass	STTH2	---	5-10	---	---	---	5-10
Bottlebrush squirreltail	SIHY	---	---	2-5	5-10	2-10	---
Sandberg bluegrass	POSE	---	---	---	2-5	1-3	---
Desert needlegrass	STSP3	---	---	---	---	2-10	---
Other perennial grasses	PPGG	---	5-15	5-10	---	---	5-15
Globemallow	SPHAE	---	2-4	---	---	---	2-4
Other perennial forbs	PPFF	5-10	---	5-10	2-5	2-8	---
Black sagebrush	ARARN	20-30	---	---	---	---	---
Winterfat	EULA5	5-10	---	2-5	---	---	---
Bud sagebrush	ARSP5	2-5	---	5-10	---	15-30	---
Small rabbitbrush	CHVIS	2-5	---	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	15-30	---	15-20	---	15-30
Spiny hopsage	GRSP	---	2-5	---	---	---	2-5
Shadscale	ATCO	---	2-5	30-40	---	30-50	2-5
Fourwing saltbush	ATCA2	---	---	2-5	---	---	---
Other shrubs	SSSS	---	2-5	5-15	5-15	---	2-5

Range site symbol	028B011N	024X045N	028B017N	028B010N	024X025N	024X045N
Potential production (lb/acre):						
Favorable years	950	350	700	800	250	350
Normal years	700	200	500	600	150	200
Unfavorable years	400	100	250	400	75	100

## 2102--Grassval-Wieland association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Grassval	Wieland	1	2
Indian ricegrass	ORHY	15-25	20-30	2-10	5-15
Needleandthread	STCO4	5-10	10-20	---	5-10
Basin wildrye	ELCI2	2-5	---	---	---
Bluebunch wheatgrass	AGSP	2-5	---	---	---
Bottlebrush squirreltail	SIHY	---	5-10	2-10	2-5
Sandberg bluegrass	POSE	---	2-5	2-5	---
Webber ricegrass	STWE	---	---	2-10	---
Thurber needlegrass	STTH2	---	---	2-5	---
Desert needlegrass	STSP3	---	---	2-5	---
Pine bluegrass	POSC	---	---	2-5	---
Other perennial grasses	PPGG	---	---	---	5-10
Eriogonum	ERIOG	---	---	1-2	---
Hawksbeard	CREPI	---	---	1-2	---
Other perennial forbs	PPFF	5-10	2-5	---	5-10
Black sagebrush	ARARN	20-30	---	---	---
Winterfat	EULA5	5-10	---	---	2-5
Bud sagebrush	ARSP5	2-5	---	2-5	5-10
Small rabbitbrush	CHVIS	2-5	---	---	---
Wyoming big sagebrush	ARTRW*	---	15-20	10-25	---
Shadscale	ATCO	---	---	10-25	30-40
Spiny hopsage	GRSP	---	---	5-15	---
Downy rabbitbrush	CHVIP	---	---	2-5	---
Fourwing saltbush	ATCA2	---	---	---	2-5
Other shrubs	SSSS	---	5-15	---	5-15
<hr/>					
Range site symbol		028B011N	028B010N	024X026N	028B017N
Potential production (lb/acre):					
Favorable years		950	800	400	700
Normal years		700	600	300	500
Unfavorable years		400	400	200	250

## 2104--Grassval-Punchbowl association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name		Inclusion number--			
		Grassval	Punchbowl	1	2	3	4
Indian ricegrass	ORHY	15-25	5-15	15-30	---	---	20-30
Needleandthread	STCO4	5-10	5-15	---	---	---	10-20
Basin wildrye	ELCI2	2-5	---	---	---	30-50	---
Bluebunch wheatgrass	AGSP	2-5	1-3	---	---	---	---
Pine bluegrass	POSC	---	2-5	---	---	---	---
Thurber needlegrass	STTH2	---	---	5-10	---	---	---
Nevada bluegrass	PONE3	---	---	---	---	2-5	---
Western wheatgrass	AGSM	---	---	---	---	2-5	---
Bottlebrush squirreltail	SIHY	---	---	---	---	---	5-10
Sandberg bluegrass	POSE	---	---	---	---	---	2-5
Other perennial grasses	PPGG	---	5-10	5-15	---	15-25	---
Globemallow	SPHAE	---	---	2-4	---	---	---
Other perennial forbs	PPFF	5-10	5-15	---	---	2-5	2-5
Black sagebrush	ARARN	20-30	20-25	---	---	---	---
Winterfat	EULA5	5-10	---	---	---	---	---
Bud sagebrush	ARSP5	2-5	2-5	---	---	---	---
Small rabbitbrush	CHVIS	2-5	---	---	---	---	---
Fourwing saltbush	ATCA2	---	2-5	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	15-30	---	---	15-20
Spiny hopsage	GRSP	---	---	2-5	---	---	---
Shadscale	ATCO	---	---	2-5	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	5-10	---
Other shrubs	SSSS	---	10-20	2-5	---	5-10	5-15
Range site symbol		028B011N	028B016N	024X045N	None	028B003N	028B010N
Potential production (lb/acre):							
Favorable years		950	500	350	---	2,600	800
Normal years		700	250	200	---	1,250	600
Unfavorable years		400	150	100	---	800	400

## 2105--Grassval-Glyphs-Muni association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Grassval	Glyphs	Muni	1	2	3
Indian ricegrass	ORHY	15-25	20-30	20-30	20-30	15-25	---
Needleandthread	STCO4	5-10	10-20	10-20	10-20	5-10	---
Basin wildrye	ELCI2	2-5	---	---	---	2-5	30-50
Bluebunch wheatgrass	AGSP	2-5	---	---	---	2-5	---
Bottlebrush squirreltail	SIHY	---	5-10	5-10	5-10	---	---
Sandberg bluegrass	POSE	---	2-5	2-5	2-5	---	---
Nevada bluegrass	PONE3	---	---	---	---	---	2-5
Western wheatgrass	AGSM	---	---	---	---	---	2-5
Other perennial grasses	PPGG	---	---	---	---	---	15-25
Perennial forbs	PPFF	5-10	2-5	2-5	2-5	5-10	2-5
Black sagebrush	ARARN	20-30	---	---	---	20-30	---
Winterfat	EULA5	5-10	---	---	---	5-10	---
Bud sagebrush	ARSP5	2-5	---	---	---	2-5	---
Small rabbitbrush	CHVIS	2-5	---	---	---	2-5	---
Wyoming big sagebrush	ARTRW*	---	15-20	15-20	15-20	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	5-10
Other shrubs	SSSS	---	5-15	5-15	5-15	---	5-10
Range site symbol		028B011N	028B010N	028B010N	028B010N	028B011N	028B003N
Potential production (lb/acre):							
Favorable years		950	800	800	800	950	2,600
Normal years		700	600	600	600	700	1,250
Unfavorable years		400	400	400	400	400	800

## 2110--Isolde-Davey association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Isolde	Davey	1	2	3
Indian ricegrass	ORHY	10-20	10-20	20-30	5-15	20-30
Needleandthread	STCO4	10-15	20-30	10-20	1-3	10-20
Thickspike wheatgrass	AGDA	---	2-10	---	---	---
Bottlebrush squirreltail	SIHY	---	2-5	5-10	5-15	5-10
Sandberg bluegrass	POSE	---	---	2-5	2-5	2-5
Other perennial grasses	PPGG	---	2-5	---	---	---
Perennial forbs	PPFF	2-5	10-20	2-5	2-8	2-5
Hairy horsebrush	TECO2	30-40	---	---	---	---
Fourwing saltbush	ATCA2	10-20	---	---	---	---
Nevada dalea	PSPO	5-10	---	---	---	---
Littleleaf horsebrush	TEGL	5-10	---	---	---	---
Big sagebrush	ARTR2	---	10-20	---	---	---
Spiny hopsage	GRSP	---	T-5	---	2-5	---
Wyoming big sagebrush	ARTRW*	---	---	15-20	---	15-20
Shadscale	ATCO	---	---	---	30-40	---
Bud sagebrush	ARSP5	---	---	---	20-30	---
Winterfat	EULA5	---	---	---	2-5	---
Other shrubs	SSSS	---	2-10	5-15	2-5	5-15

Range site symbol	027X023N	024X017N	028B010N	024X002N	028B010N
Potential production (lb/acre):					
Favorable years	300	900	800	700	800
Normal years	200	700	600	450	600
Unfavorable years	100	500	400	300	400



## 2540--Buffaran-Wieland association

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Buffaran	Wieland	1	2
Thurber needlegrass	STTH2	20-50	20-50	20-50	20-50
Bluebunch wheatgrass	AGSP	5-10	5-10	5-10	5-10
Balsamroot	BALSA	2-4	2-4	2-4	2-4
Tapertip hawksbeard	CRAC2	2-4	2-4	2-4	2-4
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	15-20
Downy rabbitbrush	CHVIP	2-5	2-5	2-5	2-5
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5
Other shrubs	SSSS	2-10	2-10	2-10	2-10
Range site symbol		O24X005N	O24X005N	O24X005N	O24X005N
Potential production (lb/acre):					
Favorable years		800	800	800	800
Normal years		600	600	600	600
Unfavorable years		400	400	400	400

## 2541--Buffaran-Zoesta association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Buffaran	Zoesta	1	2	3
Thurber needlegrass	STTH2	20-50	15-20	15-25	---	15-25
Bluebunch wheatgrass	AGSP	5-10	15-20	15-25	---	20-30
Webber ricegrass	STWE	---	5-10	---	---	---
Sandberg bluegrass	POSE	---	5-8	---	---	---
Pine bluegrass	POSC	---	5-8	---	---	---
Cusick bluegrass	POCU3	---	5-8	---	---	---
Basin wildrye	ELC12	---	---	---	50-60	---
Nevada bluegrass	PONE3	---	---	---	5-15	2-10
Mat muhly	MURI	---	---	---	2-10	---
Sedge	CAREX	---	---	---	1-5	---
Other perennial grasses	PPGG	---	---	10-20	15-20	10-15
Balsamroot	BALSA	2-4	2-5	---	---	---
Tapertip hawksbeard	CRAC2	2-4	---	2-5	---	2-5
Eriogonum	ERIOG	---	1-3	---	---	---
Phlox	PHLOX	---	1-3	---	---	---
Arrowleaf balsamroot	BASA3	---	---	2-5	---	2-5
Other perennial forbs	PPFF	---	---	2-10	5-10	2-5
Wyoming big sagebrush	ARTRW*	15-20	---	5-10	---	---
Downy rabbitbrush	CHVIP	2-5	---	---	---	---
Spiny hopsage	GRSP	2-5	---	---	---	---
Low sagebrush	ARAR8	---	20-30	---	---	---
Mountain big sagebrush	ARVA2	---	---	5-10	---	---
Basin big sagebrush	ARTRT*	---	---	---	10-15	---
Big sagebrush	ARTR2	---	---	---	---	10-15
Antelope bitterbrush	PUTR2	---	---	---	---	0-10
Other shrubs	SSSS	2-10	---	2-10	2-5	5-10

Range site symbol	024X005N	024X018N	024X035N	025X003N	025X014N
Potential production (lb/acre):					
Favorable years	800	700	500	250	1,000
Normal years	600	500	400	190	800
Unfavorable years	400	300	250	120	600

## 2542--Buffaran-Chiara association

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Buffaran, gravelly	Buffaran, very gravelly	Chiara	1	2
Indian ricegrass	ORHY	20-30	20-30	20-30	20-30	20-30
Needleandthread	STCO4	10-20	10-20	10-20	10-20	10-20
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	5-10	5-10
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	2-5
Perennial forbs	PPFF	2-5	2-5	2-5	2-5	2-5
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	15-20	15-20
Other shrubs	SSSS	5-15	5-15	5-15	5-15	5-15
<hr/>						
Range site symbol		028B010N	028B010N	028B010N	028B010N	028B010N
Potential production (lb/acre):						
Favorable years		800	800	800	800	800
Normal years		600	600	600	600	600
Unfavorable years		400	400	400	400	400

## 2543--Buffaran-Spasprey-Allor association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Buffaran	Spasprey	Allor	1	2	3
Indian ricegrass	ORHY	20-30	20-30	20-30	20-30	5-15	20-30
Needleandthread	STCO4	10-20	10-20	10-20	10-20	5-10	10-20
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	5-10	2-5	5-10
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	---	2-5
Other perennial grasses	PPGG	---	---	---	---	5-10	---
Perennial forbs	PPFF	2-5	2-5	2-5	2-5	5-10	2-5
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	15-20	---	15-20
Shadscale	ATCO	---	---	---	---	30-40	---
Bud sagebrush	ARSP5	---	---	---	---	5-10	---
Winterfat	EULA5	---	---	---	---	2-5	---
Fourwing saltbush	ATCA2	---	---	---	---	2-5	---
Other shrubs	SSSS	5-15	5-15	5-15	5-15	5-15	5-15
<hr/>							
Range site symbol		028B010N	028B010N	028B010N	028B010N	028B017N	028B010N
Potential production (lb/acre):							
Favorable years		800	800	800	800	700	800
Normal years		600	600	600	600	500	600
Unfavorable years		400	400	400	400	250	400

## 2545--Buffaran-Pineval association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Buffaran	Pineval	1	2	3
Indian ricegrass	ORHY	20-30	20-30	20-30	20-30	---
Needleandthread	STCO4	10-20	10-20	10-20	10-20	---
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	5-10	---
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	---
Basin wildrye	ELCI2	---	---	---	---	30-50
Nevada bluegrass	PONE3	---	---	---	---	2-5
Western wheatgrass	AGSM	---	---	---	---	2-5
Other perennial grasses	PPGG	---	---	---	---	15-25
Perennial forbs	PPFF	2-5	2-5	2-5	2-5	2-5
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	15-20	---
Basin big sagebrush	ARTRT*	---	---	---	---	5-10
Other shrubs	SSSS	5-15	5-15	5-15	5-15	5-10

Range site symbol	028B010N	028B010N	028B010N	028B010N	028B003N
Potential production (lb/acre):					
Favorable years	800	800	800	800	2,600
Normal years	600	600	600	600	1,250
Unfavorable years	400	400	400	400	800

## 2546--Buffaran-Spasprey-Locane association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Buffaran	Spasprey	Locane	1	2
Indian ricegrass	ORHY	20-30	20-30	20-30	20-30	---
Needleandthread	STCO4	10-20	10-20	10-20	10-20	---
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	5-10	---
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	---
Basin wildrye	ELCI2	---	---	---	---	30-50
Nevada bluegrass	PONE3	---	---	---	---	2-5
Western wheatgrass	AGSM	---	---	---	---	2-5
Other perennial grasses	PPGG	---	---	---	---	15-25
Perennial forbs	PPFF	2-5	2-5	2-5	2-5	2-5
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	15-20	---
Basin big sagebrush	ARTRT*	---	---	---	---	5-10
Other shrubs	SSSS	5-15	5-15	5-15	5-15	5-10

Range site symbol	028B010N	028B010N	028B010N	028B010N	028B003N
Potential production (lb/acre):					
Favorable years	800	800	800	800	2,600
Normal years	600	600	600	600	1,250
Unfavorable years	400	400	400	400	800

## 2547--Buffaran-Desatoya association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Buffaran	Desatoya	1	2	3
Pine bluegrass	POSC	5-15	---	5-15	5-15	---
Indian ricegrass	ORHY	5-15	---	5-15	5-15	---
Bottlebrush squirreltail	SIHY	5-10	---	5-10	5-10	---
Bluegrass	POA++	---	10-40	---	---	10-40
Thurber needlegrass	STTH2	---	2-10	---	---	2-10
Other perennial grasses	PPGG	5-10	5-10	5-10	5-10	5-10
Perennial forbs	PPFF	5-10	5-10	5-10	5-10	5-10
Wyoming big sagebrush	ARTRW*	10-20	---	10-20	10-20	---
Spiny hopsage	GRSP	10-20	---	10-20	10-20	---
Nevada ephedra	EPNE	5-10	---	5-10	5-10	---
Black sagebrush	ARARN	---	20-30	---	---	20-30
Shadscale	ATCO	---	5-10	---	---	5-10
Other shrubs	SSSS	---	5-10	---	---	5-10

Range site symbol	027X008N	027X032N	027X008N	027X008N	027X032N
Potential production (lb/acre):					
Favorable years	700	600	700	700	600
Normal years	500	400	500	500	400
Unfavorable years	300	200	300	300	200

## 2548--Buffaran-Tenabo-Pineval association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Buffaran	Tenabo	Pineval	1	2	3
Indian ricegrass	ORHY	20-30	5-15	20-30	10-15	20-30	10-15
Needleandthread	STCO4	10-20	1-3	10-20	---	10-20	---
Bottlebrush squirreltail	SIHY	5-10	5-15	5-10	---	5-10	---
Sandberg bluegrass	POSE	2-5	2-5	2-5	---	2-5	---
Thurber needlegrass	STTH2	---	---	---	10-15	---	10-15
Bluegrass	POA++	---	---	---	2-10	---	2-10
Other perennial grasses	PPGG	---	---	---	5-20	---	5-20
Globemallow	SPHAE	---	---	---	2-5	---	2-5
Other perennial forbs	PPFF	2-5	2-8	2-5	---	2-5	---
Wyoming big sagebrush	ARTRW*	15-20	---	15-20	---	15-20	---
Shadscale	ATCO	---	30-40	---	---	---	---
Bud sagebrush	ARSP5	---	20-30	---	---	---	---
Spiny hopsage	GRSP	---	2-5	---	---	---	---
Winterfat	EULA5	---	2-5	---	---	---	---
Black sagebrush	ARARN	---	---	---	25-35	---	25-35
Other shrubs	SSSS	5-15	2-5	5-15	5-35	5-15	5-35
<hr/>							
Range site symbol		028B010N	024X002N	028B010N	024X030N	028B010N	024X030N
Potential production (lb/acre):							
Favorable years		800	700	800	500	800	500
Normal years		600	450	600	350	600	350
Unfavorable years		400	300	400	250	400	250



## 2554--Laped-Hooplite-Osoll association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Laped	Hooplite	Osoll	1	2
Bottlebrush squirreltail	SIHY	5-15	---	5-15	---	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	---	5-15
Sandberg bluegrass	POSE	2-5	---	2-5	---	2-5
Needleandthread	STCO4	1-3	5-15	1-3	---	1-3
Pine bluegrass	POSC	---	2-5	---	---	---
Bluebunch wheatgrass	AGSP	---	1-3	---	---	---
Other perennial grasses	PPGG	---	5-10	---	---	---
Perennial forbs	PPFF	2-8	5-15	2-8	---	2-8
Shadscale	ATCO	30-40	---	30-40	---	30-40
Bud sagebrush	ARSP5	20-30	2-5	20-30	---	20-30
Spiny hopsage	GRSP	2-5	---	2-5	---	2-5
Winterfat	EULA5	2-5	---	2-5	---	2-5
Black sagebrush	ARARN	---	20-25	---	---	---
Fourwing saltbush	ATCA2	---	2-5	---	---	---
Other shrubs	SSSS	2-5	10-20	2-5	---	2-5

Range site symbol	024X002N	028B016N	024X002N	None	024X002N
Potential production (lb/acre):					
Favorable years	700	500	700	---	700
Normal years	450	250	450	---	450
Unfavorable years	300	150	300	---	300

## 2555--Laped-Colbar association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Laped	Colbar	1	2	3
Bottlebrush squirreltail	SIHY	5-15	---	5-15	2-10	---
Indian ricegrass	ORHY	5-15	---	5-15	2-10	15-30
Sandberg bluegrass	POSE	2-5	---	2-5	2-5	---
Needleandthread	STCO4	1-3	---	1-3	---	---
Thurber needlegrass	STTH2	---	20-50	---	2-5	5-10
Bluebunch wheatgrass	AGSP	---	5-10	---	---	---
Webber ricegrass	STWE	---	---	---	2-10	---
Desert needlegrass	STSP3	---	---	---	2-5	---
Pine bluegrass	POSC	---	---	---	2-5	---
Other perennial grasses	PPGG	---	---	---	---	5-15
Balsamroot	BALSA	---	2-4	---	---	---
Tapertip hawksbeard	CRAC2	---	2-4	---	---	---
Eriogonum	ERIOG	---	---	---	1-2	---
Hawksbeard	CREPI	---	---	---	1-2	---
Globemallow	SPHAE	---	---	---	---	2-4
Other perennial forbs	PPFF	2-8	---	2-8	---	---
Shadscale	ATCO	30-40	---	30-40	10-25	2-5
Bud sagebrush	ARSP5	20-30	---	20-30	2-5	---
Spiny hopsage	GRSP	2-5	2-5	2-5	5-15	2-5
Winterfat	EULA5	2-5	---	2-5	---	---
Wyoming big sagebrush	ARTRW*	---	15-20	---	10-25	15-30
Downy rabbitbrush	CHVIP	---	2-5	---	2-5	---
Other shrubs	SSSS	2-5	2-10	2-5	---	2-5

Range site symbol	024X002N	024X005N	024X002N	024X026N	024X045N
Potential production (lb/acre):					
Favorable years	700	800	700	400	350
Normal years	450	600	450	300	200
Unfavorable years	300	400	300	200	100

## 2570--Colbar-Atlow-Burrita association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Colbar	Atlow	Burrita	1	2	3	4
Thurber needlegrass	STTH2	20-50	10-15	20-50	20-50	---	---	X
Bluebunch wheatgrass	AGSP	5-10	---	5-10	5-10	---	---	X
Indian ricegrass	ORHY	---	10-15	---	---	---	5-15	---
Bluegrass	POA++	---	2-10	---	---	---	---	---
Bottlebrush squirreltail	SIHY	---	---	---	---	---	5-15	---
Sandberg bluegrass	POSE	---	---	---	---	---	2-5	---
Needleandthread	STCO4	---	---	---	---	---	1-3	---
Basin wildrye	ELCI2	---	---	---	---	---	---	X
Nevada bluegrass	PONE3	---	---	---	---	---	---	X
Idaho fescue	FEID	---	---	---	---	---	---	X
Other perennial grasses	PPGG	---	5-20	---	---	---	---	---
Balsamroot	BALSA	2-4	---	2-4	2-4	---	---	---
Tapertip hawksbeard	CRAC2	2-4	---	2-4	2-4	---	---	X
Globemallow	SPHAE	---	2-5	---	---	---	---	---
Arrowleaf balsamroot	BASA3	---	---	---	---	---	---	X
Other perennial forbs	PPFF	---	---	---	---	---	2-8	---
Wyoming big sagebrush	ARTRW*	15-20	---	15-20	15-20	---	---	---
Downy rabbitbrush	CHVIP	2-5	---	2-5	2-5	---	---	---
Spiny hopsage	GRSP	2-5	---	2-5	2-5	---	2-5	---
Black sagebrush	ARARN	---	25-35	---	---	---	---	---
Shadscale	ATCO	---	---	---	---	---	30-40	---
Bud sagebrush	ARSP5	---	---	---	---	---	20-30	---
Winterfat	EULA5	---	---	---	---	---	2-5	---
Big sagebrush	ARTR2	---	---	---	---	---	---	X
Snowberry	SYMPH	---	---	---	---	---	---	X
Currant	RIBES	---	---	---	---	---	---	X
Other shrubs	SSSS	2-10	5-35	2-10	2-10	---	2-5	---
Singleleaf pinyon	PIMO	---	---	---	---	---	---	X
Utah juniper	JUOS	---	---	---	---	---	---	X

Range site symbol	024X005N	024X030N	024X005N	024X005N	None	024X002N	---
Woodland site symbol	---	---	---	---	None	---	025X062N
Potential production (lb/acre):							
Favorable years	800	500	800	800	---	700	500
Normal years	600	350	600	600	---	450	350
Unfavorable years	400	250	400	400	---	300	200

## 2603--Grina-Genaw association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Grina	Genaw	1	2	3
Bluebunch wheatgrass	AGSP	X	---	---	---	15-25
Thurber needlegrass	STTH2	X	---	---	---	15-25
Indian ricegrass	ORHY	X	20-30	20-30	---	---
Bluegrass	POA++	X	---	---	---	---
Basin wildrye	ELCI2	X	---	---	30-50	---
Needleandthread	STCO4	---	10-20	10-20	---	---
Bottlebrush squirreltail	SIHY	---	5-10	5-10	---	---
Sandberg bluegrass	POSE	---	2-5	2-5	---	---
Nevada bluegrass	PONE3	---	---	---	2-5	---
Western wheatgrass	AGSM	---	---	---	2-5	---
Other perennial grasses	PPGG	---	---	---	15-25	10-20
Tapertip hawksbeard	CRAC2	X	---	---	---	2-5
Arrowleaf balsamroot	BASA3	X	---	---	---	2-5
Other perennial forbs	PPFF	---	2-5	2-5	2-5	2-10
Big sagebrush	ARTR2	X	---	---	---	---
Douglas rabbitbrush	CHVI8	X	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	15-20	15-20	---	5-10
Basin big sagebrush	ARTRT*	---	---	---	5-10	---
Mountain big sagebrush	ARVA2	---	---	---	---	5-10
Other shrubs	SSSS	---	5-15	5-15	5-10	2-10
Utah juniper	JUOS	X	---	---	---	---

Range site symbol	---	028B010N	028B010N	028B003N	024X035N
Woodland site symbol	025X059N	---	---	---	---
Potential production (lb/acre):					
Favorable years	500	800	800	2,600	500
Normal years	350	600	600	1,250	400
Unfavorable years	200	400	400	800	250

## 2640--Rasille-Kelk association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Rasille	Kelk	1	2	3
Indian ricegrass	ORHY	20-30	---	---	5-15	---
Needleandthread	STCO4	10-20	---	---	1-3	---
Bottlebrush squirreltail	SIHY	5-10	---	5-10	5-15	---
Sandberg bluegrass	POSE	2-5	---	---	2-5	---
Basin wildrye	ELCI2	---	50-60	---	---	40-60
Western wheatgrass	AGSM	---	5-15	---	---	---
Alkali sacaton	SPAI	---	---	---	---	15-30
Inland saltgrass	DISPS2	---	---	---	---	5-10
Other perennial grasses	PPGG	---	---	T-10	---	---
Perennial forbs	PPFF	2-5	2-8	2-8	2-8	---
Wyoming big sagebrush	ARTRW*	15-20	---	---	---	---
Basin big sagebrush	ARTRT*	---	15-20	---	---	---
Black greasewood	SAVE4	---	2-10	15-30	---	5-15
Rubber rabbitbrush	CHNA2	---	2-5	---	---	1-2
Shadscale	ATCO	---	---	30-50	30-40	---
Bud sagebrush	ARSP5	---	---	5-15	20-30	---
Seepweed	SUAED	---	---	2-15	---	---
Spiny hopsage	GRSP	---	---	---	2-5	---
Winterfat	EULA5	---	---	---	2-5	---
Alkali rabbitbrush	CHAL9	---	---	---	---	1-2
Other shrubs	SSSS	5-15	---	---	2-5	---

Range site symbol	028B010N	024X006N	024X003N	024X002N	024X007N
Potential production (lb/acre):					
Favorable years	800	1,500	600	700	1,900
Normal years	600	1,100	450	450	1,400
Unfavorable years	400	600	300	300	800

## 2672--Zoesta Variant-Jung-Trunk association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Zoesta Variant	Jung	Trunk	1	2	3
Indian ricegrass	ORHY	10-15	10-15	---	---	15-30	---
Thurber needlegrass	STTH2	10-15	10-15	20-50	X	5-10	---
Bluegrass	POA++	2-10	2-10	---	---	---	---
Bluebunch wheatgrass	AGSP	---	---	5-10	X	---	---
Basin wildrye	ELCI2	---	---	---	X	---	---
Nevada bluegrass	PONE3	---	---	---	X	---	---
Idaho fescue	FEID	---	---	---	X	---	---
Other perennial grasses	PPGG	5-20	5-20	---	---	5-15	---
Globemallow	SPHAE	2-5	2-5	---	---	2-4	---
Balsamroot	BALSA	---	---	2-4	---	---	---
Tapertip hawksbeard	CRAC2	---	---	2-4	X	---	---
Arrowleaf balsamroot	BASA3	---	---	---	X	---	---
Black sagebrush	ARARN	25-35	25-35	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	15-20	---	15-30	---
Downy rabbitbrush	CHVIP	---	---	2-5	---	---	---
Spiny hopsage	GRSP	---	---	2-5	---	2-5	---
Big sagebrush	ARTR2	---	---	---	X	---	---
Snowberry	SYMPH	---	---	---	X	---	---
Currant	RIBES	---	---	---	X	---	---
Shadscale	ATCO	---	---	---	---	2-5	---
Other shrubs	SSSS	5-35	5-35	2-10	---	2-5	---
Singleleaf pinyon	PIMO	---	---	---	X	---	---
Utah juniper	JUOS	---	---	---	X	---	---

Range site symbol	024X030N	024X030N	024X005N	---	024X045N	None
Woodland site symbol	---	---	---	025X062N	---	None
Potential production (lb/acre):						
Favorable years	500	500	800	500	350	---
Normal years	350	350	600	350	200	---
Unfavorable years	250	250	400	200	100	---

## 2681--Tessfive-Puett-Grina association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Tessfive	Puett	Grina	1	2	3
Indian ricegrass	ORHY	10-15	10-30	X	20-30	5-15	5-15
Thurber needlegrass	STTH2	10-15	---	X	---	---	10-20
Bluegrass	POA++	2-10	---	X	---	---	---
Bottlebrush squirreltail	SIHY	---	5-10	---	5-10	5-15	2-10
Bluebunch wheatgrass	AGSP	---	---	X	---	---	---
Basin wildrye	ELCI2	---	---	X	---	---	---
Needleandthread	STCO4	---	---	---	10-20	1-3	---
Sandberg bluegrass	POSE	---	---	---	2-5	2-5	2-10
Other perennial grasses	PPGG	5-20	10-20	---	---	---	---
Globemallow	SPHAE	2-5	---	---	---	---	1-2
Tapertip hawksbeard	CRAC2	---	---	X	---	---	1-2
Arrowleaf balsamroot	BASA3	---	---	X	---	---	---
Phlox	PHLOX	---	---	---	---	---	1-2
Other perennial forbs	PPFF	---	5-15	---	2-5	2-8	---
Black sagebrush	ARARN	25-35	5-15	---	---	---	---
Downy rabbitbrush	CHVIP	---	1-5	---	---	---	---
Spiny hopsage	GRSP	---	1-5	---	---	2-5	5-15
Antelope bitterbrush	PUTR2	---	1-5	---	---	---	---
Purple sage	SADOC2	---	T-5	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	10-25	---	15-20	---	30-35
Big sagebrush	ARTR2	---	---	X	---	---	---
Douglas rabbitbrush	CHVI8	---	---	X	---	---	---
Shadscale	ATCO	---	---	---	---	30-40	---
Bud sagebrush	ARSP5	---	---	---	---	20-30	---
Winterfat	EULA5	---	---	---	---	2-5	---
Other shrubs	SSSS	5-35	2-4	---	5-15	2-5	---
Utah juniper	JUOS	---	---	X	---	---	---
Range site symbol		024X030N	025X025N	---	028B010N	024X002N	024X020N
Woodland site symbol		---	---	025X059N	---	---	---
Potential production (lb/acre):							
Favorable years		500	200	500	800	700	700
Normal years		350	150	350	600	450	450
Unfavorable years		250	100	200	400	300	300

## 2683--Tessfive-Genaw-Orovada association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Tessfive	Genaw	Orovada	1	2	3
Indian ricegrass	ORHY	10-15	20-30	20-30	15-25	10-30	5-15
Thurber needlegrass	STTH2	10-15	---	---	---	---	---
Bluegrass	POA++	2-10	---	---	---	---	---
Needleandthread	STCO4	---	10-20	10-20	5-10	---	5-10
Bottlebrush squirreltail	SIHY	---	5-10	5-10	---	5-10	2-5
Sandberg bluegrass	POSE	---	2-5	2-5	---	---	---
Basin wildrye	ELCI2	---	---	---	2-5	---	---
Bluebunch wheatgrass	AGSP	---	---	---	2-5	---	---
Other perennial grasses	PPGG	5-20	---	---	---	10-20	5-10
Globemallow	SPHAE	2-5	---	---	---	---	---
Other perennial forbs	PPFF	---	2-5	2-5	5-10	5-15	5-10
Black sagebrush	ARARN	25-35	---	---	20-30	5-15	---
Wyoming big sagebrush	ARTRW*	---	15-20	15-20	---	10-25	---
Winterfat	EULA5	---	---	---	5-10	---	2-5
Bud sagebrush	ARSP5	---	---	---	2-5	---	5-10
Small rabbitbrush	CHVIS	---	---	---	2-5	---	---
Downy rabbitbrush	CHVIP	---	---	---	---	1-5	---
Spiny hopsage	GRSP	---	---	---	---	1-5	---
Antelope bitterbrush	PUTR2	---	---	---	---	1-5	---
Purple sage	SADOC2	---	---	---	---	T-5	---
Shadscale	ATCO	---	---	---	---	---	30-40
Fourwing saltbush	ATCA2	---	---	---	---	---	2-5
Other shrubs	SSSS	5-35	5-15	5-15	---	2-4	5-15
Range site symbol							
		024X030N	028B010N	028B010N	028B011N	025X025N	028B017N
Potential production (lb/acre):							
Favorable years		500	800	800	950	200	700
Normal years		350	600	600	700	150	500
Unfavorable years		250	400	400	400	100	250



## 2684--Tessfive-Perlor-Orovada association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Tessfive	Perlor	Orovada	1	2	3
Indian ricegrass	ORHY	10-15	5-15	20-30	10-30	20-30	20-30
Thurber needlegrass	STTH2	10-15	---	---	---	---	---
Bluegrass	POA++	2-10	---	---	---	---	---
Bottlebrush squirreltail	SIHY	---	5-15	5-10	5-10	5-10	5-10
Sandberg bluegrass	POSE	---	2-5	2-5	---	2-5	2-5
Needleandthread	STCO4	---	1-3	10-20	---	10-20	10-20
Other perennial grasses	PPGG	5-20	---	---	10-20	---	---
Globemallow	SPHAE	2-5	---	---	---	---	---
Other perennial forbs	PPFF	---	2-8	2-5	5-15	2-5	2-5
Black sagebrush	ARARN	25-35	---	---	5-15	---	---
Shadscale	ATCO	---	30-40	---	---	---	---
Bud sagebrush	ARSP5	---	20-30	---	---	---	---
Spiny hopsage	GRSP	---	2-5	---	1-5	---	---
Winterfat	EULA5	---	2-5	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	15-20	10-25	15-20	15-20
Downy rabbitbrush	CHVIP	---	---	---	1-5	---	---
Antelope bitterbrush	PUTR2	---	---	---	1-5	---	---
Purple sage	SADOC2	---	---	---	T-5	---	---
Other shrubs	SSSS	5-35	2-5	5-15	2-4	5-15	5-15

Range site symbol	024X030N	024X002N	028B010N	025X025N	028B010N	028B010N
Potential production (lb/acre):						
Favorable years	500	700	800	200	800	800
Normal years	350	450	600	150	600	600
Unfavorable years	250	300	400	100	400	400

## 2690--Itca Variant-Reluctan-Handy association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Itca Variant	Reluctan	Handy	1	2	3
Bluebunch wheatgrass	AGSP	X	20-30	20-30	X	15-20	20-30
Basin wildrye	ELCI2	X	2-15	---	X	---	2-15
Thurber needlegrass	STTH2	X	2-10	15-25	X	15-20	2-10
Nevada bluegrass	PONE3	X	---	2-10	X	---	---
Idaho fescue	FEID	X	20-40	---	X	---	20-40
Other perennial grasses	PPGG	---	---	10-15	---	---	---
Webber ricegrass	STWE	---	---	---	---	5-10	---
Sandberg bluegrass	POSE	---	---	---	---	5-8	---
Pine bluegrass	POSC	---	---	---	---	5-8	---
Cusick bluegrass	POCU3	---	---	---	---	5-8	---
Tapertip hawksbeard	CRAC2	X	1-5	2-5	X	---	1-5
Arrowleaf balsamroot	BASA3	X	1-5	2-5	X	---	1-5
Balsamroot	BALSA	---	---	---	---	2-5	---
Eriogonum	ERIOG	---	---	---	---	1-3	---
Phlox	PHLOX	---	---	---	---	1-3	---
Other perennial forbs	PPFF	---	---	2-5	---	---	---
Big sagebrush	ARTR2	X	---	10-15	X	---	---
Snowberry	SYMPH	X	---	---	X	---	---
Currant	RIBES	X	---	---	X	---	---
Mountain big sagebrush	ARVA2	---	5-15	---	---	---	5-15
Antelope bitterbrush	PUTR2	---	---	0-10	---	---	---
Low sagebrush	ARAR8	---	---	---	---	20-30	---
Other shrubs	SSSS	---	---	5-10	---	---	---
Singleleaf pinyon	PIMO	X	---	---	X	---	---
Utah juniper	JUOS	X	---	---	X	---	---

Range site symbol	---	024X021N	025X014N	---	024X018N	024X021N
Woodland site symbol	025X062N	---	---	025X062N	---	---
Potential production (lb/acre):						
Favorable years	500	1,400	1,000	500	700	1,400
Normal years	350	1,000	800	350	500	1,000
Unfavorable years	200	700	600	200	300	700

## 2730--Pula-Spike-Bufferan association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Pula	Spike	Bufferan	1	2	3
Indian ricegrass	ORHY	20-30	15-30	20-30	10-15	---	5-15
Needleandthread	STCO4	10-20	---	10-20	---	---	5-15
Bottlebrush squirreltail	SIHY	5-10	---	5-10	---	---	---
Sandberg bluegrass	POSE	2-5	---	2-5	---	---	---
Thurber needlegrass	STTH2	---	5-10	---	10-15	---	---
Bluegrass	POA++	---	---	---	2-10	---	---
Basin wildrye	ELCI2	---	---	---	---	30-50	---
Nevada bluegrass	PONE3	---	---	---	---	2-5	---
Western wheatgrass	AGSM	---	---	---	---	2-5	---
Pine bluegrass	POSC	---	---	---	---	---	2-5
Bluebunch wheatgrass	AGSP	---	---	---	---	---	1-3
Other perennial grasses	PPGG	---	5-15	---	5-20	15-25	5-10
Globemallow	SPHAE	---	2-4	---	2-5	---	---
Other perennial forbs	PPFF	2-5	---	2-5	---	2-5	5-15
Wyoming big sagebrush	ARTRW*	15-20	15-30	15-20	---	---	---
Spiny hopsage	GRSP	---	2-5	---	---	---	---
Shadscale	ATCO	---	2-5	---	---	---	---
Black sagebrush	ARARN	---	---	---	25-35	---	20-25
Basin big sagebrush	ARTRT*	---	---	---	---	5-10	---
Fourwing saltbush	ATCA2	---	---	---	---	---	2-5
Bud sagebrush	ARSP5	---	---	---	---	---	2-5
Other shrubs	SSSS	5-15	2-5	5-15	5-35	5-10	10-20
<hr/>							
Range site symbol		028B010N	024X045N	028B010N	024X030N	028B003N	028B016N
Potential production (lb/acre):							
Favorable years		800	350	800	500	2,600	500
Normal years		600	200	600	350	1,250	250
Unfavorable years		400	100	400	250	800	150

## 2731--Pula-Spike association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name		Inclusion number--			
		Pula	Spike	1	2	3	4
Indian ricegrass	ORHY	20-30	15-30	5-15	15-30	20-30	5-15
Needleandthread	STCO4	10-20	---	1-3	---	10-20	---
Bottlebrush squirreltail	SIHY	5-10	---	5-15	---	5-10	2-10
Sandberg bluegrass	POSE	2-5	---	2-5	---	2-5	2-10
Thurber needlegrass	STTH2	---	5-10	---	5-10	---	10-20
Other perennial grasses	PPGG	---	5-15	---	5-15	---	---
Globemallow	SPHAE	---	2-4	---	2-4	---	1-2
Tapertip hawksbeard	CRAC2	---	---	---	---	---	1-2
Phlox	PHLOX	---	---	---	---	---	1-2
Other perennial forbs	PPFF	2-5	---	2-8	---	2-5	---
Wyoming big sagebrush	ARTRW*	15-20	15-30	---	15-30	15-20	30-35
Spiny hopsage	GRSP	---	2-5	2-5	2-5	---	5-15
Shadscale	ATCO	---	2-5	30-40	2-5	---	---
Bud sagebrush	ARSP5	---	---	20-30	---	---	---
Winterfat	EULA5	---	---	2-5	---	---	---
Other shrubs	SSSS	5-15	2-5	2-5	2-5	5-15	---

Range site symbol	028B010N	024X045N	024X002N	024X045N	028B010N	024X020N
Potential production (lb/acre):						
Favorable years	800	350	700	350	800	700
Normal years	600	200	450	200	600	450
Unfavorable years	400	100	300	100	400	300

## 2740--Spike-Desatoya Variant-Grassval association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Spike	Desatoya Variant	Grassval	1	2
Indian ricegrass	ORHY	15-30	10-15	10-15	20-30	5-15
Thurber needlegrass	STTH2	5-10	10-15	10-15	---	10-20
Bluegrass	POA++	---	2-10	2-10	---	---
Needleandthread	STCO4	---	---	---	10-20	---
Bottlebrush squirreltail	SIHY	---	---	---	5-10	2-10
Sandberg bluegrass	POSE	---	---	---	2-5	2-10
Other perennial grasses	PPGG	5-15	5-20	5-20	---	---
Globemallow	SPHAE	2-4	2-5	2-5	---	1-2
Tapertip hawksbeard	CRAC2	---	---	---	---	1-2
Phlox	PHLOX	---	---	---	---	1-2
Other perennial forbs	PPFF	---	---	---	2-5	---
Wyoming big sagebrush	ARTRW*	15-30	---	---	15-20	30-35
Spiny hopsage	GRSP	2-5	---	---	---	5-15
Shadscale	ATCO	2-5	---	---	---	---
Black sagebrush	ARARN	---	25-35	25-35	---	---
Other shrubs	SSSS	2-5	5-35	5-35	5-15	---

Range site symbol	O24X045N	O24X030N	O24X030N	O28B010N	O24X020N
Potential production (lb/acre):					
Favorable years	350	500	500	800	700
Normal years	200	350	350	600	450
Unfavorable years	100	250	250	400	300

## 2771--Kram-Hopeka-Rock outcrop association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Kram	Hopeka	Rock outcrop	1	2	3
Bluebunch wheatgrass	AGSP	X	X	---	20-30	---	---
Indian ricegrass	ORHY	X	X	---	---	10-15	---
Thurber needlegrass	STTH2	X	X	---	2-10	10-15	---
Bluegrass	POA++	X	X	---	---	2-10	---
Idaho fescue	FEID	---	---	---	20-40	---	---
Basin wildrye	ELCI2	---	---	---	2-15	---	50-60
Nevada bluegrass	PONE3	---	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	---	1-5
Other perennial grasses	PPGG	X	X	---	---	5-20	15-20
Tapertip hawkbeard	CRAC2	X	X	---	1-5	---	---
Arrowleaf balsamroot	BASA3	X	X	---	1-5	---	---
Globeamallow	SPHAE	---	---	---	---	2-5	---
Other perennial forbs	PPFF	X	X	---	---	---	5-10
Black sagebrush	ARARN	X	X	---	---	25-35	---
Downy rabbitbrush	CHVIP	X	X	---	---	---	---
Mountain big sagebrush	ARVA2	---	---	---	5-15	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	10-15
Other shrubs	SSSS	X	X	---	---	5-35	2-5
Utah juniper	JUOS	X	X	---	---	---	---
Singleleaf pinyon	PIMO	X	X	---	---	---	---
Range site symbol							
		---	---	None	024X021N	024X030N	025X003N
Woodland site symbol		025X063N	025Z063N	None	---	---	---
Potential production (lb/acre):							
Favorable years		400	400	---	1,400	500	2,500
Normal years		275	275	---	1,000	350	1,900
Unfavorable years		150	150	---	700	250	1,200

## 2780--Desatoya-Tenabo-Pineval association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Desatoya	Tenabo	Pineval	1	2	3
Bluegrass	POA++	10-40	---	---	---	---	---
Thurber needlegrass	STTH2	2-10	---	---	---	---	---
Indian ricegrass	ORHY	---	5-15	20-30	20-30	15-25	20-30
Needleandthread	STCO4	---	5-10	10-20	10-20	5-10	10-20
Bottlebrush squirreltail	SIHY	---	2-5	5-10	5-10	---	5-10
Sandberg bluegrass	POSE	---	---	2-5	2-5	---	2-5
Basin wildrye	ELCI2	---	---	---	---	2-5	---
Bluebunch wheatgrass	AGSP	---	---	---	---	2-5	---
Other perennial grasses	PPGG	5-10	5-10	---	---	---	---
Perennial forbs	PPFF	5-10	5-10	2-5	2-5	5-10	2-5
Black sagebrush	ARARN	20-30	---	---	---	20-30	---
Shadscale	ATCO	5-10	30-40	---	---	---	---
Bud sagebrush	ARSP5	---	5-10	---	---	2-5	---
Winterfat	EULA5	---	2-5	---	---	5-10	---
Fourwing saltbush	ATCA2	---	2-5	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	15-20	15-20	---	15-20
Small rabbitbrush	CHVIS	---	---	---	---	2-5	---
Other shrubs	SSSS	5-10	5-15	5-15	5-15	---	5-15
Range site symbol		027X032N	028B017N	028B010N	028B010N	028B011N	028B010N
Potential production (lb/acre):							
Favorable years		600	700	800	800	950	800
Normal years		400	500	600	600	700	600
Unfavorable years		200	250	400	400	400	400

## 2781--Desatoya-Orovada association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Desatoya	Orovada	1	2	3
Bluegrass	POA++	10-40	---	---	---	10-40
Thurber needlegrass	STTH2	2-10	---	---	---	2-10
Indian ricegrass	ORHY	---	20-30	20-30	5-15	---
Needleandthread	STCO4	---	10-20	10-20	5-10	---
Bottlebrush squirreltail	SIHY	---	5-10	5-10	2-5	---
Sandberg bluegrass	POSE	---	2-5	2-5	---	---
Other perennial grasses	PPGG	5-10	---	---	5-10	5-10
Perennial forbs	PPFF	5-10	2-5	2-5	5-10	5-10
Black sagebrush	ARARN	20-30	---	---	---	20-30
Shadscale	ATCO	5-10	---	---	30-40	5-10
Wyoming big sagebrush	ARTRW*	---	15-20	15-20	---	---
Bud sagebrush	ARSP5	---	---	---	5-10	---
Winterfat	EULA5	---	---	---	2-5	---
Fourwing saltbush	ATCA2	---	---	---	2-5	---
Other shrubs	SSSS	5-10	5-15	5-15	5-15	5-10

Range site symbol	027X032N	28B010N	028B010N	028B017N	027X032N
Potential production (lb/acre):					
Favorable years	600	800	800	700	600
Normal years	400	600	600	500	400
Unfavorable years	200	400	400	250	200



## 2782--Desatoya-Pineval-Grassval association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Desatoya	Pineval	Grassval	1	2	3
Indian ricegrass	ORHY	10-15	20-30	15-25	10-15	20-30	20-30
Thurber needlegrass	STTH2	10-15	---	---	10-15	---	---
Bluegrass	POA++	2-10	---	---	2-10	---	---
Needleandthread	STCO4	---	10-20	5-10	---	10-20	10-20
Bottlebrush squirreltail	SIHY	---	5-10	---	---	5-10	5-10
Sandberg bluegrass	POSE	---	2-5	---	---	2-5	2-5
Basin wildrye	ELCI2	---	---	2-5	---	---	---
Bluebunch wheatgrass	AGSP	---	---	2-5	---	---	---
Other perennial grasses	PPGG	5-20	---	---	5-20	---	---
Globemallow	SPHAE	2-5	---	---	2-5	---	---
Other perennial forbs	PPFF	---	2-5	5-10	---	2-5	2-5
Black sagebrush	ARARN	25-35	---	20-30	25-35	---	---
Wyoming big sagebrush	ARTRW*	---	15-20	---	---	15-20	15-20
Winterfat	EULA5	---	---	5-10	---	---	---
Bud sagebrush	ARSP5	---	---	2-5	---	---	---
Small rabbitbrush	CHVIS	---	---	2-5	---	---	---
Other shrubs	SSSS	5-35	5-15	---	5-35	5-15	5-15
<hr/>							
Range site symbol		024X030N	028B010N	028B011N	024X030N	028B010N	028B010N
Potential production (lb/acre):							
Favorable years		500	800	950	500	800	800
Normal years		350	600	700	350	600	600
Unfavorable years		250	400	400	250	400	400

## 2783--Desatoya-Spike association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Desatoya, steep	Spike	Desatoya, strongly sloping	1	2	3
Indian ricegrass	ORHY	10-15	15-30	10-15	20-30	---	20-30
Thurber needlegrass	STTH2	10-15	5-10	10-15	---	---	---
Bluegrass	POA++	2-10	---	2-10	---	---	---
Needleandthread	STCO4	---	---	---	10-20	---	10-20
Bottlebrush squirreltail	SIHY	---	---	---	5-10	---	5-10
Sandberg bluegrass	POSE	---	---	---	2-5	---	2-5
Basin wildrye	ELCI2	---	---	---	---	30-50	---
Nevada bluegrass	PONE3	---	---	---	---	2-5	---
Western wheatgrass	AGSM	---	---	---	---	2-5	---
Other perennial grasses	PPGG	5-20	5-15	5-20	---	15-25	---
Globemallow	SPHAE	2-5	2-4	2-5	---	---	---
Other perennial forbs	PPFF	---	---	---	2-5	2-5	2-5
Black sagebrush	ARARN	25-35	---	25-35	---	---	---
Wyoming big sagebrush	ARTRW*	---	15-30	---	15-20	---	15-20
Spiny hopsage	GRSP	---	2-5	---	---	---	---
Shadscale	ATCO	---	2-5	---	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	5-10	---
Other shrubs	SSSS	5-35	2-5	5-35	5-15	5-10	5-15
<hr/>							
Range site symbol		O24X030N	O24X045N	O24X030N	O28B010N	O28B003N	O28B010N
Potential production (lb/acre):							
Favorable years		500	350	500	800	2,600	800
Normal years		350	200	350	600	1,250	600
Unfavorable years		250	100	250	400	800	400

## 2791--Old Camp-Colbar-Rock outcrop association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Old Camp	Colbar	Rock outcrop	1	2	3
Thurber needlegrass	STTH2	20-50	20-50	---	5-10	---	10-20
Bluebunch wheatgrass	AGSP	5-10	5-10	---	40-60	---	---
Bluegrass	POA++	---	---	---	2-10	---	---
Basin wildrye	ELCI2	---	---	---	2-5	---	---
Bottlebrush squirreltail	SIHY	---	---	---	---	5-15	2-10
Indian ricegrass	ORHY	---	---	---	---	5-15	5-15
Sandberg bluegrass	POSE	---	---	---	---	2-5	2-10
Needleandthread	STC04	---	---	---	---	1-3	---
Balsamroot	BALSA	2-4	2-4	---	---	---	---
Tapertip hawksbeard	CRAC2	2-4	2-4	---	2-5	---	1-2
Arrowleaf balsamroot	BASA3	---	---	---	2-5	---	---
Globemallow	SPHAE	---	---	---	---	---	1-2
Phlox	PHLOX	---	---	---	---	---	1-2
Other perennial forbs	PPFF	---	---	---	---	2-8	---
Wyoming big sagebrush	ARTRW*	15-20	15-20	---	5-10	---	30-35
Downy rabbitbrush	CHVIP	2-5	2-5	---	---	---	---
Spiny hopsage	GRSP	2-5	2-5	---	---	2-5	5-15
Mountain big sagebrush	ARVA2	---	---	---	T-5	---	---
Shadscale	ATCO	---	---	---	---	30-40	---
Bud sagebrush	ARSP5	---	---	---	---	20-30	---
Winterfat	EULA5	---	---	---	---	2-5	---
Other shrubs	SSSS	2-10	2-10	---	---	2-5	---
Range site symbol		024X005N	024X005N	None	024X028N	024X002N	024X020N
Potential production (lb/acre):							
Favorable years		800	800	---	1,000	700	700
Normal years		600	600	---	700	450	450
Unfavorable years		400	400	---	500	300	300

## 2792--Old Camp-Allor-Puett associaton

[The letter "T" means trace. An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Old Camp	Allor	Puett	1	2	3
Pine bluegrass	POSC	20-30	5-15	---	---	5-15	---
Thurber needlegrass	STTH2	5-10	---	---	X	---	2-10
Indian ricegrass	ORHY	---	5-15	10-30	---	5-15	---
Bottlebrush squirreltail	SIHY	---	5-10	5-10	---	5-10	---
Bluebunch wheatgrass	AGSP	---	---	---	X	---	---
Basin wildrye	ELCI2	---	---	---	X	---	---
Nevada bluegrass	PONE3	---	---	---	X	---	---
Idaho fescue	FEID	---	---	---	X	---	---
Bluegrass	POA++	---	---	---	---	---	10-40
Other perennial grasses	PPGG	5-15	5-10	10-20	---	5-10	5-10
Tapertip hawksbeard	CRAC2	---	---	---	X	---	---
Arrowleaf balsamroot	BASA3	---	---	---	X	---	---
Other perennial forbs	PPFF	5-10	5-10	5-15	---	5-10	5-10
Wyoming big sagebrush	ARTRW*	10-20	10-20	10-25	---	10-20	---
Spiny hopsage	GRSP	5-15	10-20	1-5	---	10-20	---
Nevada ephedra	EPNE	5-10	5-10	---	---	5-10	---
Downy rabbitbrush	CHVIP	---	---	1-5	---	---	---
Antelope bitterbrush	PUTR2	---	---	1-5	---	---	---
Black sagebrush	ARARN	---	---	5-15	---	---	20-30
Purple sage	SADOC2	---	---	T-5	---	---	---
Big sagebrush	ARTR2	---	---	---	X	---	---
Snowberry	SYMPH	---	---	---	X	---	---
Currant	RIBES	---	---	---	X	---	---
Shadscale	ATCO	---	---	---	---	---	5-10
Other shrubs	SSSS	5-10	---	2-4	---	---	5-10
Singleleaf pinyon	PIMO	---	---	---	X	---	---
Utah juniper	JUOS	---	---	---	X	---	---

Range site symbol	027X007N	027X008N	025X025N	---	027X008N	027X032N
Woodland site symbol	---	---	---	025X062N	---	---
Potential production (lb/acre):						
Favorable years	600	700	200	500	700	600
Normal years	450	500	150	350	500	400
Unfavorable years	300	300	100	200	300	200

## 2793--Old Camp-Laped association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Old Camp	Laped	1	2	3
Thurber needlegrass	STTH2	20-50	---	2-5	20-50	10-20
Bluebunch wheatgrass	AGSP	5-10	---	---	5-10	---
Bottlebrush squirreltail	SIHY	---	5-15	2-10	---	2-10
Indian ricegrass	ORHY	---	5-15	2-10	---	5-15
Sandberg bluegrass	POSE	---	2-5	2-5	---	2-10
Needleandthread	STCO4	---	1-3	---	---	---
Webber ricegrass	STWE	---	---	2-10	---	---
Desert needlegrass	STSP3	---	---	2-5	---	---
Pine bluegrass	POSC	---	---	2-5	---	---
Balsamroot	BALSA	2-4	---	---	2-4	---
Tapertip hawksbeard	CRAC2	2-4	---	---	2-4	1-2
Eriogonum	ERIOG	---	---	1-2	---	---
Hawksbeard	CREPI	---	---	1-2	---	---
Globemallow	SPHAE	---	---	---	---	1-2
Phlox	PHLOX	---	---	---	---	1-2
Other perennial forbs	PPFF	---	2-8	---	---	---
Wyoming big sagebrush	ARTRW*	15-20	---	10-25	15-20	30-35
Downy rabbitbrush	CHVIP	2-5	---	2-5	2-5	---
Spiny hopsage	GRSP	2-5	2-5	5-15	2-5	5-15
Shadscale	ATCO	---	30-40	10-25	---	---
Bud sagebrush	ARSP5	---	20-30	2-5	---	---
Winterfat	EULA5	---	2-5	---	---	---
Other shrubs	SSSS	2-10	2-5	---	2-10	---

Range site symbol	O24X005N	O24X002N	O24X026N	O24X005N	O24X020N
Potential production (lb/acre):					
Favorable years	800	700	400	800	700
Normal years	600	450	300	600	450
Unfavorable years	400	300	200	400	300

## 2797--Old Camp-Colbar association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Old Camp, steep	Colbar	Old Camp, strongly sloping	1	2	3
Thurber needlegrass	STTH2	20-50	20-50	20-50	15-25	10-15	---
Bluebunch wheatgrass	AGSP	5-10	5-10	5-10	20-30	---	---
Nevada bluegrass	PONE3	---	---	---	2-10	---	---
Other perennial grasses	PPGG	---	---	---	10-15	5-20	---
Indian ricegrass	ORHY	---	---	---	---	10-15	5-15
Bluegrass	POA++	---	---	---	---	2-10	---
Bottlebrush squirreltail	SIHY	---	---	---	---	---	5-15
Sandberg bluegrass	POSE	---	---	---	---	---	2-5
Needleandthread	STCO4	---	---	---	---	---	1-3
Balsamroot	BALSA	2-4	2-4	2-4	---	---	---
Tapertip hawksbeard	CRAC2	2-4	2-4	2-4	2-5	---	---
Arrowleaf balsamroot	BASA3	---	---	---	2-5	---	---
Globemallow	SPHAE	---	---	---	---	2-5	---
Other perennial forbs	PPFF	---	---	---	2-5	---	2-8
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	---	---	---
Downy rabbitbrush	CHVIP	2-5	2-5	2-5	---	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	---	---	2-5
Big sagebrush	ARTR2	---	---	---	10-15	---	---
Antelope bitterbrush	PUTR2	---	---	---	0-10	---	---
Black sagebrush	ARARN	---	---	---	---	25-35	---
Shadscale	ATCO	---	---	---	---	---	30-40
Bud sagebrush	ARSP5	---	---	---	---	---	20-30
Winterfat	EULA5	---	---	---	---	---	2-5
Other shrubs	SSSS	2-10	2-10	2-10	5-10	5-35	2-5

Range site symbol	024X005N	024X005N	024X005N	025X014N	024X030N	024X002N
Potential production (lb/acre):						
Favorable years	800	800	800	1,000	500	700
Normal years	600	600	600	800	350	450
Unfavorable years	400	400	400	600	250	300

## 2798--Old Camp-Atlow-Osoll association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Old Camp	Atlow	Osoll	1	2	3	4
Thurber needlegrass	STTH2	20-50	10-15	---	10-15	5-10	5-15	---
Bluebunch wheatgrass	AGSP	5-10	---	---	---	---	5-15	---
Indian ricegrass	ORHY	---	10-15	5-15	10-15	15-30	---	---
Bluegrass	POA++	---	2-10	---	2-10	---	---	---
Bottlebrush squirreltail	SIHY	---	---	5-15	---	---	---	---
Sandberg bluegrass	POSE	---	---	2-5	---	---	---	---
Needleandthread	STCO4	---	---	1-3	---	---	---	---
Basin wildrye	ELCI2	---	---	---	---	---	30-50	---
Other perennial grasses	PPGG	---	5-20	---	5-20	5-15	5-10	---
Balsamroot	BALSA	2-4	---	---	---	---	---	---
Tapertip hawksbeard	CRAC2	2-4	---	---	---	---	---	---
Globemallow	SPHAE	---	2-5	---	2-5	2-4	---	---
Arrowleaf balsamroot	BASA3	---	---	---	---	---	2-5	---
Other perennial forbs	PPFF	---	---	2-8	---	---	2-8	---
Wyoming big sagebrush	ARTRW*	15-20	---	---	---	15-30	---	---
Downy rabbitbrush	CHVIP	2-5	---	---	---	---	---	---
Spiny hopsage	GRSP	2-5	---	2-5	---	2-5	2-4	---
Black sagebrush	ARARN	---	25-35	---	25-35	---	---	---
Shadscale	ATCO	---	---	30-40	---	2-5	---	---
Bud sagebrush	ARSP5	---	---	20-30	---	---	---	---
Winterfat	EULA5	---	---	2-5	---	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	5-10	---
Other shrubs	SSSS	2-10	5-35	2-5	5-35	2-5	---	---

Range site symbol	024X005N	024X030N	024X002N	024X030N	024X045N	025X013N	None
Potential production (lb/acre):							
Favorable years	800	500	700	500	350	1,000	---
Normal years	600	350	450	350	200	800	---
Unfavorable years	400	250	300	250	100	500	---

## 3001--Barrier-Kobeh association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Barrier	Kobeh	1	2	3
Indian ricegrass	ORHY	15-25	20-30	15-25	15-25	5-15
Needleandthread	STCO4	5-10	10-20	5-10	5-10	5-10
Basin wildrye	ELCI2	2-5	---	2-5	2-5	---
Bluebunch wheatgrass	AGSP	2-5	---	2-5	2-5	---
Bottlebrush squirreltail	SIHY	---	5-10	---	---	2-5
Sandberg bluegrass	POSE	---	2-5	---	---	---
Other perennial grasses	PPGG	---	---	---	---	5-10
Perennial forbs	PPFF	5-10	2-5	5-10	5-10	5-10
Black sagebrush	ARARN	20-30	---	20-30	20-30	---
Winterfat	EULA5	5-10	---	5-10	5-10	2-5
Bud sagebrush	ARSP5	2-5	---	2-5	2-5	5-10
Small rabbitbrush	CHVIS	2-5	---	2-5	2-5	---
Wyoming big sagebrush	ARTRW*	---	15-20	---	---	---
Shadscale	ATCO	---	---	---	---	30-40
Fourwing saltbush	ATCA2	---	---	---	---	2-5
Other shrubs	SSSS	---	5-15	---	---	5-15

Range site symbol	028B011N	028B010N	028B011N	028B011N	028B017N
Potential production (lb/acre):					
Favorable years	950	800	950	950	700
Normal years	700	600	700	700	500
Unfavorable years	400	400	400	400	250



## 3011--Defler-Orovada association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Defler	Orovada	1	2	3
Indian ricegrass	ORHY	15-25	20-30	20-30	2-5	15-25
Bottlebrush squirreltail	SIHY	2-5	5-10	5-10	2-5	2-5
Needleandthread	STCO4	---	10-20	10-20	2-5	---
Sandberg bluegrass	POSE	---	2-5	2-5	---	---
Basin wildrye	ELCI2	---	---	---	10-20	---
Other perennial grasses	PPGG	5-10	---	---	5-10	5-10
Perennial forbs	PPFF	5-10	2-5	2-5	5-10	5-10
Winterfat	EULA5	30-45	---	---	---	30-45
Wyoming big sagebrush	ARTRW*	---	15-20	15-20	---	---
Basin big sagebrush	ARTRT*	---	---	---	10-15	---
Greene rabbitbrush	CHGR6	---	---	---	2-5	---
Nevada ephedra	EPNE	---	---	---	2-5	---
Fourwing saltbush	ATCA2	---	---	---	2-5	---
Other shrubs	SSSS	5-15	5-15	5-15	5-10	5-15

Range site symbol	028B013N	028B010N	028B010N	028B009N	028B013N
Potential production (lb/acre):					
Favorable years	800	800	800	700	800
Normal years	550	600	600	400	550
Unfavorable years	300	400	400	300	300

## 3050--Novacan cobbly loam, 2 to 8 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Novacan	1	2	3
Indian ricegrass	ORHY	15-25	20-30	15-25	5-15
Needleandthread	STCO4	5-10	10-20	5-10	5-10
Basin wildrye	ELCI2	2-5	---	2-5	---
Bluebunch wheatgrass	AGSP	2-5	---	2-5	---
Bottlebrush squirreltail	SIHY	---	5-10	---	2-5
Sandberg bluegrass	POSE	---	2-5	---	---
Other perennial grasses	PPGG	---	---	---	5-10
Perennial forbs	PPFF	5-10	2-5	5-10	5-10
Black sagebrush	ARARN	20-30	---	20-30	---
Winterfat	EULA5	5-10	---	5-10	2-5
Bud sagebrush	ARSP5	2-5	---	2-5	5-10
Small rabbitbrush	CHVIS	2-5	---	2-5	---
Wyoming big sagebrush	ARTRW*	---	15-20	---	---
Shadscale	ATCO	---	---	---	30-40
Fourwing saltbush	ATCA2	---	---	---	2-5
Other shrubs	SSSS	---	5-15	---	5-15

Range site symbol	028B011N	028B010N	028B011N	028B017N
Potential production (lb/acre):				
Favorable years	950	800	950	700
Normal years	700	600	700	500
Unfavorable years	400	400	400	250

## 3071--Allor-Wieland association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Allor	Wieland	1	2	3
Indian ricegrass	ORHY	20-30	20-30	20-30	---	20-30
Needleandthread	STCO4	10-20	10-20	10-20	---	10-20
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	---	5-10
Sandberg bluegrass	POSE	2-5	2-5	2-5	---	2-5
Basin wildrye	ELCI2	---	---	---	30-50	---
Nevada bluegrass	PONE3	---	---	---	2-5	---
Western wheatgrass	AGSM	---	---	---	2-5	---
Other perennial grasses	PPGG	---	---	---	15-25	---
Perennial forbs	PPFF	2-5	2-5	2-5	2-5	2-5
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	---	15-20
Basin big sagebrush	ARTRT*	---	---	---	5-10	---
Other shrubs	SSSS	5-15	5-15	5-15	5-10	5-15

Range site symbol	028B010N	028B010N	028B010N	028B003N	028B010N
Potential production (lb/acre):					
Favorable years	800	800	800	2,600	800
Normal years	600	600	600	1,250	600
Unfavorable years	400	400	400	800	400

## 3072--Allor-Orovada association, moderately sloping

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Allor	Orovada	1	2	3
Indian ricegrass	ORHY	20-30	20-30	20-30	20-30	---
Needleandthread	STCO4	10-20	10-20	10-20	10-20	---
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	5-10	---
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	---
Bluebunch wheatgrass	AGSP	---	---	---	---	10-20
Thurber needlegrass	STTH2	---	---	---	---	5-10
Basin wildrye	ELCI2	---	---	---	---	2-5
Pine bluegrass	POSC	---	---	---	---	2-5
Other perennial grasses	PPGG	---	---	---	---	10-20
Perennial forbs	PPFF	2-5	2-5	2-5	2-5	5-12
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	15-20	---
Mountain big sagebrush	ARVA2	---	---	---	---	15-25
Antelope bitterbrush	PUTR2	---	---	---	---	5-10
Utah serviceberry	AMUT	---	---	---	---	2-10
Other shrubs	SSSS	5-15	5-15	5-15	5-15	5-15
Range site symbol		028B010N	028B010N	028B010N	028B010N	028B030N
Potential production (lb/acre):						
Favorable years		800	800	800	800	1,100
Normal years		600	600	600	600	850
Unfavorable years		400	400	400	400	550

## 3073--Allor-Kelk association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Allor	Kelk	1	2
Indian ricegrass	ORHY	20-30	20-30	20-30	---
Needleandthread	STCO4	10-20	10-20	10-20	---
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	---
Sandberg bluegrass	POSE	2-5	2-5	2-5	---
Basin wildrye	ELCI2	---	---	---	30-50
Nevada bluegrass	PONE3	---	---	---	2-5
Western wheatgrass	AGSM	---	---	---	2-5
Other perennial grasses	PPGG	---	---	---	15-25
Perennial forbs	PPFF	2-5	2-5	2-5	2-5
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	---
Basin big sagebrush	ARTRT*	---	---	---	5-10
Other shrubs	SSSS	5-15	5-15	5-15	5-10

Range site symbol	028B010N	028B010N	028B010N	028B003N
Potential production (lb/acre):				
Favorable years	800	800	800	2,600
Normal years	600	600	600	1,250
Unfavorable years	400	400	400	800

## 3074--Allor-Orovada association, nearly level

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Allor	Orovada	1	2	3
Indian ricegrass	ORHY	20-30	20-30	5-15	2-5	10-20
Needleandthread	STCO4	10-20	10-20	1-3	---	---
Bottlebrush squirreltail	SIHY	5-10	5-10	5-15	2-5	2-10
Sandberg bluegrass	POSE	2-5	2-5	2-5	---	---
Basin wildrye	ELCI2	---	---	---	5-20	---
Thelypody	THELY	---	---	---	2-4	---
Other perennial forbs	PPFF	2-5	2-5	2-8	---	2-8
Wyoming big sagebrush	ARTRW*	15-20	15-20	---	5-10	---
Shadscale	ATCO	---	---	30-40	---	---
Bud sagebrush	ARSP5	---	---	20-30	---	2-5
Spiny hopsage	GRSP	---	---	2-5	5-15	---
Winterfat	EULA5	---	---	2-5	---	60-70
Black greasewood	SAVE4	---	---	---	20-30	---
Basin big sagebrush	ARTRT*	---	---	---	5-15	---
Other shrubs	SSSS	5-15	5-15	2-5	---	---
<hr/>						
Range site symbol		028B010N	028B010N	024X002N	024X022N	024X004N
Potential production (lb/acre):						
Favorable years		800	800	700	800	500
Normal years		600	600	450	600	350
Unfavorable years		400	400	300	350	200

## 3080--Zaidy-Ricert association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name		Inclusion number--			
		Zaidy	Ricert	1	2	3	4
Indian ricegrass	ORHY	15-25	5-15	5-15	20-30	5-15	20-30
Needleandthread	STCO4	5-10	1-3	5-15	10-20	5-15	10-20
Basin wildrye	ELCI2	2-5	---	---	---	---	---
Bluebunch wheatgrass	AGSP	2-5	---	1-3	---	1-3	---
Bottlebrush squirreltail	SIHY	---	5-15	---	5-10	---	5-10
Sandberg bluegrass	POSE	---	2-5	---	2-5	---	2-5
Pine bluegrass	POSC	---	---	2-5	---	2-5	---
Other perennial grasses	PPGG	---	---	5-10	---	5-10	---
Perennial forbs	PPFF	5-10	2-8	5-15	2-5	5-15	2-5
Black sagebrush	ARARN	20-30	---	20-25	---	20-25	---
Winterfat	EULA5	5-10	2-5	---	---	---	---
Bud sagebrush	ARSP5	2-5	20-30	2-5	---	2-5	---
Small rabbitbrush	CHVIS	2-5	---	---	---	---	---
Shadscale	ATCO	---	30-40	---	---	---	---
Spiny hopsage	GRSP	---	2-5	---	---	---	---
Fourwing saltbush	ATCA2	---	---	2-5	---	2-5	---
Wyoming big sagebrush	ARTRW*	---	---	---	15-20	---	15-20
Other shrubs	SSSS	---	2-5	10-20	5-15	10-20	5-15
Range site symbol		O28B011N	O24X002N	O28B016N	O28B010N	O28B016N	O28B010N
Potential production (lb/acre):							
Favorable years		950	700	500	800	500	800
Normal years		700	450	250	600	250	600
Unfavorable years		400	300	150	400	150	400

## 3081--Zaidy-Allor association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Zaidy	Allor	1	2	3
Indian ricegrass	ORHY	15-25	20-30	20-30	15-30	20-30
Needleandthread	STCO4	5-10	10-20	10-20	---	10-20
Basin wildrye	ELCI2	2-5	---	---	---	---
Bluebunch wheatgrass	AGSP	2-5	---	---	---	---
Bottlebrush squirreltail	SIHY	---	5-10	5-10	---	5-10
Sandberg bluegrass	POSE	---	2-5	2-5	---	2-5
Thurber needlegrass	STH2	---	---	---	5-10	---
Other perennial grasses	PPGG	---	---	---	5-15	---
Globemallow	SPHAE	---	---	---	2-4	---
Other perennial forbs	PPFF	5-10	2-5	2-5	---	2-5
Black sagebrush	ARARN	20-30	---	---	---	---
Winterfat	EULA5	5-10	---	---	---	---
Bud sagebrush	ARSP5	2-5	---	---	---	---
Small rabbitbrush	CHVIS	2-5	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	15-20	15-20	15-30	15-20
Spiny hopsage	GRSP	---	---	---	2-5	---
Shadscale	ATCO	---	---	---	2-5	---
Other shrubs	SSSS	---	5-15	5-15	2-5	5-15

Range site symbol	028B011N	028B010N	028B010N	024X045N	028B010N
Potential production (lb/acre):					
Favorable years	950	800	800	350	800
Normal years	700	600	600	200	600
Unfavorable years	400	400	400	100	400



## 3091--Packer-Newlands association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Packer	Packer, cobbly	Newlands	1	2	3
Idaho fescue	FEID	10-20	10-20	10-15	25-50	10-20	---
Webber ricegrass	STWE	5-10	5-10	---	---	5-10	---
Bottlebrush squirreltail	SIHY	5-10	5-10	---	---	5-10	---
Cusick bluegrass	POCU3	2-5	2-5	---	---	2-5	---
Sandberg bluegrass	POSE	2-5	2-5	---	---	2-5	---
Pine bluegrass	POSC	2-5	2-5	---	---	2-5	---
Mountain brome	BRCA5	---	---	15-20	---	---	---
Letterman needlegrass	STLE4	---	---	5-10	---	---	---
Spike fescue	LEKI2	---	---	5-10	2-10	---	---
Bluebunch wheatgrass	AGSP	---	---	---	15-30	---	---
Thurber needlegrass	STTH2	---	---	---	2-10	---	---
Other perennial grasses	PPGG	---	---	5-15	---	---	---
Goldenweed	HAPLO2	2-5	2-5	---	---	2-5	---
Phlox	PHLOX	2-5	2-5	---	---	2-5	---
Balsamroot	BALSA	---	---	---	2-5	---	---
Other perennial forbs	PPFF	---	---	5-10	---	---	---
Low sagebrush	ARAR8	5-15	5-15	---	10-20	5-15	---
Black sagebrush	ARARN	5-15	5-15	---	---	5-15	---
Mountain big sagebrush	ARVA2	1-5	1-5	10-20	---	1-5	---
Utah serviceberry	AMUT	---	---	5-10	---	---	---
Snowberry	SYMPH	---	---	5-10	---	---	---
Douglas rabbitbrush	CHVI8	---	---	---	2-5	---	---
Range site symbol		024X016N	024X016N	028B029N	024X027N	024X016N	None
Potential production (lb/acre):							
Favorable years		350	350	1,500	1,200	350	---
Normal years		250	250	900	800	250	---
Unfavorable years		150	150	650	600	150	---

## 3092--Packer-Hapgood-Rock outcrop association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Packer	Hapgood	Rock outcrop	1	2	3
Idaho fescue	FEID	10-20	5-15	---	10-20	---	5-15
Webber ricegrass	STWE	5-10	---	---	5-10	---	---
Bottlebrush squirreltail	SIHY	5-10	---	---	5-10	---	---
Cusick bluegrass	POCU3	2-5	---	---	2-5	---	2-5
Sandberg bluegrass	POSE	2-5	---	---	2-5	---	---
Pine bluegrass	POSC	2-5	---	---	2-5	---	---
Mountain brome	BRCA5	---	10-15	---	---	---	5-10
Slender wheatgrass	AGTR	---	20-30	---	---	2-5	2-5
Bluebunch wheatgrass	AGSP	---	5-10	---	---	---	5-15
Spike fescue	LEKI2	---	2-15	---	---	---	---
Bulbous oniongrass	MEBU	---	2-5	---	---	---	---
Nevada bluegrass	PONE3	---	2-5	---	---	---	2-5
Letterman needlegrass	STLE4	---	---	---	---	60-70	2-5
Columbia needlegrass	STNE3	---	---	---	---	2-5	---
Basin wildrye	ELCI2	---	---	---	---	---	2-5
Other perennial grasses	PPGG	---	---	---	---	2-5	---
Goldenweed	HAPLO2	2-5	---	---	2-5	---	---
Phlox	PHLOX	2-5	---	---	2-5	---	---
Geranium	GERAN	---	2-5	---	---	---	---
Groundsel	SENEC	---	2-5	---	---	---	---
Lupine	LUPIN	---	2-5	---	---	---	---
Tailcup lupine	LUCA	---	---	---	---	20-40	---
Other perennial forbs	PPFF	---	---	---	---	---	5-15
Low sagebrush	ARAR8	5-15	---	---	5-15	---	---
Black sagebrush	ARARN	5-15	---	---	5-15	---	---
Mountain big sagebrush	ARVA2	1-5	5-10	---	1-5	---	5-10
Serviceberry	AMELA	---	5-10	---	---	---	5-10
Snowberry	SYMPH	---	2-10	---	---	---	2-10
Oceanspray	HOLOD	---	---	---	---	---	5-10
Threetip sagebrush	ARTR4	---	---	---	---	---	2-10
Currant	RIBES	---	---	---	---	---	2-5

Range site symbol	024X016N	024X032N	None	024X016N	025X028N	024X034N
Potential production (lb/acre):						
Favorable years	350	2,200	---	350	1,000	1,600
Normal years	250	1,700	---	250	800	1,300
Unfavorable years	150	1,200	---	150	500	800

## 3093--Packer-Layview-Hapgood association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Packer	Layview	Hapgood	1	2	3	4
Idaho fescue	FEID	10-20	10-20	30-60	---	---	X	---
Webber ricegrass	STWE	5-10	5-10	---	---	---	---	5-10
Bottlebrush squirreltail	SIHY	5-10	5-10	---	---	---	---	---
Cusick bluegrass	POCU3	2-5	2-5	5-10	---	---	---	5-8
Sandberg bluegrass	POSE	2-5	2-5	---	---	---	---	5-8
Pine bluegrass	POSC	2-5	2-5	---	---	---	---	5-8
Bluebunch wheatgrass	AGSP	---	---	5-10	---	---	X	15-20
Mountain brome	BRCA5	---	---	2-5	---	---	---	---
Sedge	CAREX	---	---	2-5	---	---	---	---
Basin wildrye	ELCI2	---	---	---	30-50	---	---	---
Western wheatgrass	AGSM	---	---	---	5-10	---	---	---
Nevada bluegrass	PONE3	---	---	---	5-10	---	---	---
Bluegrass	POA++	---	---	---	---	---	X	---
Thurber needlegrass	STTH2	---	---	---	---	---	---	15-20
Other perennial grasses	PPGG	---	---	---	5-15	---	X	---
Goldenweed	HAPLO2	2-5	2-5	---	---	---	---	---
Phlox	PHLOX	2-5	2-5	---	---	---	---	1-3
Tapertip hawksbeard	CRAC2	---	---	1-3	---	---	X	---
Lupine	LUPIN	---	---	1-2	---	---	---	---
Arrowleaf balsamroot	BASA3	---	---	---	---	---	X	---
Balsamroot	BALSA	---	---	---	---	---	---	2-5
Eriogonum	ERIOG	---	---	---	---	---	---	1-3
Other perennial forbs	PPFF	---	---	---	5-10	---	X	---
Low sagebrush	ARAR8	5-15	5-15	---	---	---	---	20-30
Black sagebrush	ARARN	5-15	5-15	---	---	---	---	---
Mountain big sagebrush	ARVA2	1-5	1-5	5-15	---	---	---	---
Snowberry	SYMPH	---	---	2-5	---	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	5-10	---	---	---
Rubber rabbitbrush	CHNA2	---	---	---	2-5	---	---	---
Big sagebrush	ARTR2	---	---	---	---	---	X	---
Other shrubs	SSSS	---	---	---	5-10	---	X	---
Singleleaf pinyon	PIMO	---	---	---	---	---	X	---
Range site symbol	024X016N	024X016N	024X023N	028B024N	None	---	024X018N	---
Woodland site symbol	---	---	---	---	None	025X061N	---	---
Potential production (lb/acre):								
Favorable years	350	350	1,500	2,800	---	500	700	
Normal years	250	250	1,200	1,700	---	375	500	
Unfavorable years	150	150	900	1,000	---	250	300	

## 3094--Packer-Hapgood-Torro association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Packer	Hapgood	Torro	1	2	3	4
Idaho fescue	FEID	10-20	5-15	1-10	10-15	10-20	---	---
Webber ricegrass	STWE	5-10	---	---	---	5-10	---	---
Bottlebrush squirreltail	SIHY	5-10	---	2-5	---	5-10	---	---
Cusick bluegrass	POCU3	2-5	---	---	---	2-5	---	---
Sandberg bluegrass	POSE	2-5	---	---	---	2-5	---	---
Pine bluegrass	POSC	2-5	---	---	---	2-5	---	---
Mountain brome	BRCA5	---	10-15	2-15	5-20	---	---	---
Slender wheatgrass	AGTR	---	20-30	---	---	---	---	---
Bluebunch wheatgrass	AGSP	---	5-10	20-50	---	---	---	---
Spike fescue	LEKI2	---	2-15	---	5-10	---	---	---
Bulbous oniongrass	MEBU	---	2-5	---	---	---	---	---
Nevada bluegrass	PONE3	---	2-5	---	---	---	---	---
Basin wildrye	ELCI2	---	---	5-10	---	---	---	---
Thurber needlegrass	STTH2	---	---	2-5	---	---	---	---
Letterman needlegrass	STLE4	---	---	---	5-10	---	---	---
Other perennial grasses	PPGG	---	---	---	5-15	---	---	---
Goldenweed	HAPLO2	2-5	---	---	---	2-5	---	---
Phlox	PHLOX	2-5	---	---	---	2-5	---	---
Geranium	GERAN	---	2-5	---	---	---	---	---
Groundsel	SENEC	---	2-5	---	---	---	---	---
Lupine	LUPIN	---	2-5	---	---	---	---	---
Tapertip hawksbeard	CRAC2	---	---	2-5	---	---	---	---
Arrowleaf balsamroot	BASA3	---	---	2-5	---	---	---	---
Other perennial forbs	PPFF	---	---	---	5-10	---	---	---
Low sagebrush	ARAR8	5-15	---	---	---	5-15	---	---
Black sagebrush	ARARN	5-15	---	---	---	5-15	---	---
Mountain big sagebrush	ARVA2	1-5	5-10	5-15	10-20	1-5	---	---
Serviceberry	AMELA	---	5-10	---	---	---	---	---
Snowberry	SYMPH	---	2-10	---	5-10	---	---	---
Utah serviceberry	AMUT	---	---	---	5-10	---	---	---

Range site symbol	024X016N	024X032N	024X029N	028B029N	024X016N	None	None
Potential production (lb/acre):							
Favorable years	350	2,200	1,500	1,500	350	---	---
Normal years	250	1,700	1,100	900	250	---	---
Unfavorable years	150	1,200	800	650	150	---	---

## 3101--Hackwood-Newlands-Hapgood association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Hackwood	Newlands	Hapgood	1	2	3
Mountain brome	BRCA5	X	15-20	10-15	---	---	---
Idaho fescue	FEID	X	10-15	5-15	---	10-20	---
Letterman needlegrass	STLE4	---	5-10	---	60-70	---	---
Spike fescue	LEKI2	---	5-10	2-15	---	---	---
Slender wheatgrass	AGTR	X	---	20-30	2-5	---	---
Bluebunch wheatgrass	AGSP	---	---	5-10	---	---	---
Bulbous oniongrass	MEBU	X	---	2-5	---	---	---
Nevada bluegrass	PONE3	---	---	2-5	---	---	---
Columbia needlegrass	STNE3	---	---	---	2-5	---	---
Webber ricegrass	STWE	---	---	---	---	5-10	---
Bottlebrush squirreltail	SIHY	---	---	---	---	5-10	---
Cusick bluegrass	POCU3	---	---	---	---	2-5	---
Sandberg bluegrass	POSE	---	---	---	---	2-5	---
Pine bluegrass	POSC	---	---	---	---	2-5	---
Other perennial grasses	PPGG	X	5-15	---	2-5	---	---
Geranium	GERAN	X	---	2-5	---	---	---
Groundsel	SENEC	---	---	2-5	---	---	---
Lupine	LUPIN	X	---	2-5	---	---	---
Tailcup lupine	LUCA	---	---	---	20-40	---	---
Goldenweed	HAPLO2	---	---	---	---	2-5	---
Phlox	PHLOX	---	---	---	---	2-5	---
Other perennial forbs	PPFF	---	5-10	---	---	---	---
Mountain big sagebrush	ARVA2	---	10-20	5-10	---	1-5	---
Utah serviceberry	AMUT	---	5-10	---	---	---	---
Snowberry	SYMPH	X	5-10	2-10	---	---	---
Serviceberry	AMELA	---	---	5-10	---	---	---
Low sagebrush	ARAR8	---	---	---	---	5-15	---
Black sagebrush	ARARN	---	---	---	---	5-15	---
Big sagebrush	ARTRT2	X	---	---	---	---	---
Currant	RIBES	X	---	---	---	---	---
Quaking aspen	POTR5	X	---	---	---	---	---
Range site symbol	---	028B029N	024X032N	025X028N	024X016N	None	None
Woodland site symbol	025X065N	---	---	---	---	---	---
Potential production (lb/acre):							
Favorable years	800	1,500	2,200	1,000	350	---	---
Normal years	600	900	1,700	800	250	---	---
Unfavorable years	400	650	1,200	500	150	---	---

## 3111--Ninemile-Zoesta-Itca association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Ninemile	Zoesta	Itca	1	2	3
Bluebunch wheatgrass	AGSP	5-15	2-5	X	---	---	1-3
Pine bluegrass	POSC	5-10	---	---	---	---	2-5
Thurber needlegrass	STTH2	2-5	5-15	---	---	---	---
Indian ricegrass	ORHY	2-5	5-10	---	---	---	5-15
Bottlebrush squirreltail	SIHY	2-5	2-5	---	---	---	---
Sandberg bluegrass	POSE	---	5-10	---	---	---	---
Idaho fescue	FEID	---	---	X	---	---	---
Bluegrass	POA++	---	---	X	---	---	---
Basin wildrye	ELCI2	---	---	---	---	30-50	---
Nevada bluegrass	PONE3	---	---	---	---	2-5	---
Western wheatgrass	AGSM	---	---	---	---	2-5	---
Needleandthread	STCO4	---	---	---	---	---	5-15
Other perennial grasses	PPGG	10-15	---	X	---	15-25	5-10
Tapertip hawksbeard	CRAC2	---	---	X	---	---	---
Arrowleaf balsamroot	BASA3	---	---	X	---	---	---
Other perennial forbs	PPFF	10-15	5-10	X	---	2-5	5-15
Low sagebrush	ARAR8	25-30	25-30	---	---	---	---
Big sagebrush	ARTR2	---	---	X	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	5-10	---
Black sagebrush	ARARN	---	---	---	---	---	20-25
Fourwing saltbush	ATCA2	---	---	---	---	---	2-5
Bud sagebrush	ARSP5	---	---	---	---	---	2-5
Other shrubs	SSSS	10-20	10-15	X	---	5-10	10-20
Singleleaf pinyon	PIMO	---	---	X	---	---	---
Range site symbol		028B037N	028B045N	---	None	028B003N	028B016N
Woodland site symbol		---	---	025X061N	None	---	---
Potential production (lb/acre):							
Favorable years		700	800	500	---	2,600	500
Normal years		500	600	375	---	1,250	250
Unfavorable years		300	400	250	---	800	150

## 3120--Walti-Softscrabble-Chad association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Walti	Softscrabble	Chad	1	2	3
Bluebunch wheatgrass	AGSP	5-15	20-30	20-50	5-10	---	---
Pine bluegrass	POSC	5-10	---	---	5-10	---	---
Thurber needlegrass	STTH2	2-5	2-10	2-5	---	---	---
Indian ricegrass	ORHY	2-5	---	---	---	---	---
Bottlebrush squirreltail	SIHY	2-5	---	2-5	---	---	---
Idaho fescue	FEID	---	20-40	1-10	10-15	---	---
Basin wildrye	ELCI2	---	2-15	5-10	---	---	---
Mountain brome	BRCA5	---	---	2-15	---	---	---
Other perennial grasses	PPGG	10-15	---	---	10-15	---	---
Tapertip hawksbeard	CRAC2	---	1-5	2-5	---	---	---
Arrowleaf balsamroot	BASA3	---	1-5	2-5	---	---	---
Other perennial forbs	PPFF	10-15	---	---	5-10	---	---
Low sagebrush	ARAR8	25-30	---	---	5-15	---	---
Mountain big sagebrush	ARVA2	---	5-15	5-15	---	---	---
Black sagebrush	ARARN	---	---	---	5-15	---	---
Other shrubs	SSSS	10-20	---	---	5-10	---	---
Range site symbol		028B037N	024X021N	024X029N	028B038N	None	None
Potential production (lb/acre):							
Favorable years		700	1,400	1,500	800	---	---
Normal years		500	1,000	1,100	600	---	---
Unfavorable years		300	700	800	400	---	---

## 3121--Walti-Softscrabble-Bucan association

The letter "T" means trace. An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Walti	Softscrabble	Bucan	1	2	3	4
no fescue	FEID	25-50	20-40	---	---	---	X	---
ebunch wheatgrass	AGSP	15-30	20-30	40-60	---	---	---	---
erber needlegrass	STTH2	2-10	2-10	5-10	---	---	---	---
ke fescue	LEKI2	2-10	---	---	---	---	---	---
in wildrye	ELCI2	---	2-15	2-5	30-50	---	---	---
egrass	POA++	---	---	2-10	---	---	---	---
ern wheatgrass	AGSM	---	---	---	5-10	---	---	---
ada bluegrass	PONE3	---	---	---	5-10	---	---	5-10
ed hairgrass	DECA5	---	---	---	---	---	---	30-60
ine timothy	PHAL2	---	---	---	---	---	---	5-10
ge	CAREX	---	---	---	---	---	---	5-10
low barley	HOBR2	---	---	---	---	---	---	2-5
er perennial grasses	PPGG	---	---	---	5-15	---	X	2-10
samroot	BALSA	2-5	---	---	---	---	---	---
ertip hawksbeard	CRAC2	---	1-5	2-5	---	---	---	---
owleaf balsamroot	BASA3	---	1-5	2-5	---	---	---	---
ra clover	TRWO	---	---	---	---	---	---	2-5
uefoil	POTEN	---	---	---	---	---	---	2-5
er perennial forbs	PPFF	---	---	---	5-10	---	X	10-20
sagebrush	ARAR8	10-20	---	---	---	---	---	---
glas rabbitbrush	CHVI8	2-5	---	---	---	---	---	---
tain big sagebrush	ARVA2	---	5-15	---	---	---	---	---
ing big sagebrush	ARTRW*	---	---	5-10	---	---	---	---
n big sagebrush	ARTRT*	---	---	---	5-10	---	---	---
er rabbitbrush	CHNA2	---	---	---	2-5	---	---	---
ow	SALIX	---	---	---	---	---	---	2-5
er shrubs	SSSS	---	---	---	5-10	---	X	2-5
ing aspen	POTR5	---	---	---	---	---	X	---

re site symbol	024X027N	024X021N	024X028N	028B024N	None	---	025X005N
land site symbol	---	---	---	---	None	025X065N	---
ntial production (lb/acre):							
orable years	1,200	1,400	1,000	2,800	---	800	2,000
mal years	800	1,000	700	1,700	---	600	1,700
avorable years	600	700	500	1,000	---	400	1,000



## 3122--Walti-Sumine-Softscrabble association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Walti	Sumine	Softscrabble	1	2	3	4
Idaho fescue	FEID	25-50	1-10	20-40	10-20	---	---	---
Bluebunch wheatgrass	AGSP	15-30	20-50	20-30	---	---	---	---
Thurber needlegrass	STTH2	2-10	2-5	2-10	---	---	---	---
Spike fescue	LEKI2	2-10	---	---	---	---	---	---
Basin wildrye	ELCI2	---	5-10	2-15	---	---	30-50	---
Mountain brome	BRCA5	---	2-15	---	---	---	---	---
Bottlebrush squirreltail	SIHY	---	2-5	---	5-10	---	---	---
Webber ricegrass	STWE	---	---	---	5-10	---	---	---
Cusick bluegrass	POCU3	---	---	---	2-5	---	---	---
Sandberg bluegrass	POSE	---	---	---	2-5	---	---	---
Pine bluegrass	POSC	---	---	---	2-5	---	---	---
Western wheatgrass	AGSM	---	---	---	---	---	5-10	---
Nevada bluegrass	PONE3	---	---	---	---	---	5-10	---
Other perennial grasses	PPGG	---	---	---	---	---	5-15	---
Balsamroot	BALSA	2-5	---	---	---	---	---	---
Tapertip hawksbeard	CRAC2	---	2-5	1-5	---	---	---	---
Arrowleaf balsamroot	BASA3	---	2-5	1-5	---	---	---	---
Goldenweed	HAPLO2	---	---	---	2-5	---	---	---
Phlox	PHLOX	---	---	---	2-5	---	---	---
Other perennial forbs	PPFF	---	---	---	---	---	5-10	---
Low sagebrush	ARAR8	10-20	---	---	5-15	---	---	---
Douglas rabbitbrush	CHVI8	2-5	---	---	---	---	---	---
Mountain big sagebrush	ARVA2	---	5-15	5-15	1-5	---	---	---
Black sagebrush	ARARN	---	---	---	5-15	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	5-10	---
Rubber rabbitbrush	CHNA2	---	---	---	---	---	2-5	---
Other shrubs	SSSS	---	---	---	---	---	5-10	---

Range site symbol	O24X027N	O24X029N	O24X021N	O24X016N	None	O28B024N	None
Potential production (lb/acre):							
Favorable years	1,200	1,500	1,400	350	---	2,800	---
Normal years	800	1,100	1,000	250	---	1,700	---
Unfavorable years	600	800	700	150	---	1,000	---

## 3123--Walti-Softscrabble-Itca association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Walti	Softscrabble	Itca	1	2	3
Idaho fescue	FEID	25-50	20-40	X	---	1-10	10-20
Bluebunch wheatgrass	AGSP	15-30	20-30	X	---	20-50	---
Thurber needlegrass	STTH2	2-10	2-10	---	---	2-5	---
Spike fescue	LEKI2	2-10	---	---	---	---	---
Basin wildrye	ELCI2	---	2-15	---	5-10	5-10	---
Bluegrass	POA++	---	---	X	---	---	---
Slender wheatgrass	AGTR	---	---	---	1-10	---	---
Nodding brome	BRAN	---	---	---	1-10	---	---
Slender hairgrass	DEEL	---	---	---	2-5	---	---
Mountain brome	BRCA5	---	---	---	---	2-15	---
Bottlebrush squirreltail	SIHY	---	---	---	---	2-5	5-10
Webber ricegrass	STWE	---	---	---	---	---	5-10
Cusick bluegrass	POCU3	---	---	---	---	---	2-5
Sandberg bluegrass	POSE	---	---	---	---	---	2-5
Pine bluegrass	POSC	---	---	---	---	---	2-5
Other perennial grasses	PPGG	---	---	X	5-10	---	---
Balsamroot	BALSA	2-5	---	---	---	---	---
Tapertip hawksbeard	CRAC2	---	1-5	X	---	2-5	---
Arrowleaf balsamroot	BASA3	---	1-5	X	---	2-5	---
Goldenweed	HAPLO2	---	---	---	---	---	2-5
Phlox	PHLOX	---	---	---	---	---	2-5
Other perennial forbs	PPFF	---	---	X	10-20	---	---
Low sagebrush	ARAR8	10-20	---	---	---	---	5-15
Douglas rabbitbrush	CHVI8	2-5	---	---	---	---	---
Mountain big sagebrush	ARVA2	---	5-15	---	---	5-15	1-5
Big sagebrush	ARTR2	---	---	X	---	---	---
Woods rose	ROWO	---	---	---	5-10	---	---
Common chokecherry	PRVI	---	---	---	5-10	---	---
Snowberry	SYMPH	---	---	---	2-5	---	---
Black sagebrush	ARARN	---	---	---	---	---	5-15
Other shrubs	SSSS	---	---	X	5-10	---	---
Singleleaf pinyon	PIMO	---	---	X	---	---	---

Range site symbol	024X027N	024X021N	---	028B025N	024X029N	024X016N
Woodland site symbol	---	---	025X061N	---	---	---
Potential production (lb/acre):						
Favorable years	1,200	1,400	500	1,700	1,500	350
Normal years	800	1,000	375	1,300	1,100	250
Unfavorable years	600	700	250	900	800	150

## 3125--Walti-Softscrabble-Robson association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Walti	Softscrabble	Robson	1	2	3	4
Bluebunch wheatgrass	AGSP	5-15	20-30	2-5	---	5-10	---	---
Pine bluegrass	POSC	5-10	---	---	---	5-10	---	---
Thurber needlegrass	STTH2	2-5	2-10	5-15	---	---	---	---
Indian ricegrass	ORHY	2-5	---	5-10	---	---	---	---
Bottlebrush squirreltail	SIHY	2-5	---	2-5	---	---	---	---
Idaho fescue	FEID	---	20-40	---	---	10-15	---	---
Basin wildrye	ELCI2	---	2-15	---	30-50	---	---	---
Sandberg bluegrass	POSE	---	---	5-10	---	---	---	---
Western wheatgrass	AGSM	---	---	---	5-10	---	---	---
Nevada bluegrass	PONE3	---	---	---	5-10	---	---	---
Other perennial grasses	PPGG	10-15	---	---	5-15	10-15	---	---
Tapertip hawksbeard	CRAC2	---	1-5	---	---	---	---	---
Arrowleaf balsamroot	BASA3	---	1-5	---	---	---	---	---
Other perennial forbs	PPFF	10-15	---	5-10	5-10	5-10	---	---
Low sagebrush	ARAR8	25-30	---	25-30	---	5-15	---	---
Mountain big sagebrush	ARVA2	---	5-15	---	---	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	5-10	---	---	---
Rubber rabbitbrush	CHNA2	---	---	---	2-5	---	---	---
Black sagebrush	ARARN	---	---	---	---	5-15	---	---
Other shrubs	SSSS	10-20	---	10-15	5-10	5-10	---	---

Range site symbol	028B037N	024X021N	028B045N	028B024N	028B038N	None	None
Potential production (lb/acre):							
Favorable years	700	1,400	800	2,800	800	---	---
Normal years	500	1,000	600	1,700	600	---	---
Unfavorable years	300	700	400	1,000	400	---	---

## 3130--Itca-Clanalpine-Reluctan association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Itca	Clanalpine	Reluctan	1	2	3
Idaho fescue	FEID	X	X	20-40	---	---	---
Bluebunch wheatgrass	AGSP	X	X	20-30	15-20	---	10-20
Bluegrass	POA++	X	X	---	---	---	2-10
Basin wildrye	ELCI2	---	---	2-15	---	30-50	---
Thurber needlegrass	STTH2	---	---	2-10	15-20	---	5-15
Webber ricegrass	STWE	---	---	---	5-10	---	---
Sandberg bluegrass	POSE	---	---	---	5-8	---	---
Pine bluegrass	POSC	---	---	---	5-8	---	---
Cusick bluegrass	POCU3	---	---	---	5-8	---	---
Western wheatgrass	AGSM	---	---	---	---	5-10	---
Nevada bluegrass	PONE3	---	---	---	---	5-10	---
Indian ricegrass	ORHY	---	---	---	---	---	2-10
Other perennial grasses	PPGG	X	X	---	---	5-15	---
Tapertip hawksbeard	CRAC2	X	X	1-5	---	---	2-5
Arrowleaf balsamroot	BASA3	X	X	1-5	---	---	---
Balsamroot	BALSA	---	---	---	2-5	---	---
Eriogonum	ERIOG	---	---	---	1-3	---	---
Phlox	PHLOX	---	---	---	1-3	---	---
Other perennial forbs	PPFF	X	X	---	---	5-10	5-15
Big sagebrush	ARTR2	X	X	---	---	---	---
Mountain big sagebrush	ARVA2	---	---	5-15	---	---	---
Low sagebrush	ARAR8	---	---	---	20-30	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	5-10	---
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5	---
Black sagebrush	ARARN	---	---	---	---	---	15-30
Other shrubs	SSSS	X	X	---	---	5-10	---
Singleleaf pinyon	PIMO	X	X	---	---	---	---

Range site symbol	---	---	024X021N	024X018N	028B024N	024X031N
Woodland site symbol	025X061N	025X061N	---	---	---	---
Potential production (lb/acre):						
Favorable years	500	500	1,400	700	2,800	700
Normal years	375	375	1,000	500	1,700	500
Unfavorable years	250	250	700	300	1,000	300

## 3131--Itca-Ninemile-Rock outcrop association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Itca	Ninemile	Rock outcrop	1	2	3
Idaho fescue	FEID	X	---	---	---	---	---
Bluebunch wheatgrass	AGSP	X	5-15	---	15-20	10-15	---
Bluegrass	POA++	X	---	---	---	---	---
Pine bluegrass	POSC	---	5-10	---	5-8	---	---
Thurber needlegrass	STTH2	---	2-5	---	15-20	5-10	---
Indian ricegrass	ORHY	---	2-5	---	---	---	---
Bottlebrush squirreltail	SIHY	---	2-5	---	---	---	---
Webber ricegrass	STWE	---	---	---	5-10	---	---
Sandberg bluegrass	POSE	---	---	---	5-8	---	---
Cusick bluegrass	POCU3	---	---	---	5-8	---	---
Basin wildrye	ELCI2	---	---	---	---	5-10	30-50
Western wheatgrass	AGSM	---	---	---	---	---	5-10
Nevada bluegrass	PONE3	---	---	---	---	---	5-10
Other perennial grasses	PPGG	X	10-15	---	---	10-15	5-15
Tapertip hawksbeard	CRAC2	X	---	---	---	---	---
Arrowleaf balsamroot	BASA3	X	---	---	---	---	---
Balsamroot	BALSA	---	---	---	2-5	---	---
Eriogonum	ERIOG	---	---	---	1-3	---	---
Phlox	PHLOX	---	---	---	1-3	---	---
Other perennial forbs	PPFF	X	10-15	---	---	5-15	5-10
Big sagebrush	ARTR2	X	---	---	---	---	---
Low sagebrush	ARAR8	---	25-30	---	20-30	---	---
Mountain big sagebrush	ARVA2	---	---	---	---	15-25	---
Utah serviceberry	AMUT	---	---	---	---	3-10	---
Antelope bitterbrush	PUTR2	---	---	---	---	2-8	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	5-10
Rubber rabbitbrush	CHNA2	---	---	---	---	---	2-5
Other shrubs	SSSS	X	10-20	---	---	15-20	5-10
Singleleaf pinyon	PIMO	X	---	---	---	---	---

Range site symbol	---	028B037N	None	024X018N	028B027N	028B024N
Woodland site symbol	025X061N	---	None	---	---	---
Potential production (lb/acre):						
Favorable years	500	700	---	700	900	2,800
Normal years	375	500	---	500	600	1,700
Unfavorable years	250	300	---	300	300	1,000

## 3132--Itca-Softscrabble-Cleavage association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Itca	Softscrabble	Cleavage	1	2	3
Idaho fescue	FEID	X	20-40	10-20	X	25-50	---
Bluebunch wheatgrass	AGSP	X	20-30	---	X	15-30	---
Bluegrass	POA++	X	---	---	---	---	---
Basin wildrye	ELCI2	---	2-15	---	X	---	---
Thurber needlegrass	STTH2	---	2-10	---	X	2-10	---
Webber ricegrass	STWE	---	---	5-10	---	---	---
Bottlebrush squirreltail	SIHY	---	---	5-10	---	---	---
Cusick bluegrass	POCU3	---	---	2-5	---	---	---
Sandberg bluegrass	POSE	---	---	2-5	---	---	---
Pine bluegrass	POSC	---	---	2-5	---	---	---
Nevada bluegrass	PONE3	---	---	---	X	---	---
Spike fescue	LEKI2	---	---	---	---	2-10	---
Other perennial grasses	PPGG	X	---	---	---	---	---
Tapertip hawksbeard	CRAC2	X	1-5	---	X	---	---
Arrowleaf balsamroot	BASA3	X	1-5	---	X	---	---
Goldenweed	HAPLO2	---	---	2-5	---	---	---
Phlox	PHLOX	---	---	2-5	---	---	---
Balsamroot	BALSA	---	---	---	---	2-5	---
Other perennial forbs	PPFF	X	---	---	---	---	---
Big sagebrush	ARTR2	X	---	---	X	---	---
Mountain big sagebrush	ARVA2	---	5-15	1-5	---	---	---
Low sagebrush	ARAR8	---	---	5-15	---	10-20	---
Black sagebrush	ARARN	---	---	5-15	---	---	---
Snowberry	SYMPH	---	---	---	X	---	---
Currant	RIBES	---	---	---	X	---	---
Douglas rabbitbrush	CHVI8	---	---	---	---	2-5	---
Other shrubs	SSSS	X	---	---	---	---	---
Singleleaf pinyon	PIMO	X	---	---	X	---	---
Utah juniper	JUOS	---	---	---	X	---	---

Range site symbol	---	024X021N	024X016N	---	024X027N	None
Woodland site symbol	025X061N	---	---	025X062N	---	None
Potential production (lb/acre):						
Favorable years	500	1,400	350	500	1,200	---
Normal years	375	1,000	250	350	800	---
Unfavorable years	250	700	150	200	600	---

## 3134--Itca-Clanalpine-Torro association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Itca	Clanalpine	Torro	1	2	3	4
Idaho fescue	FEID	X	X	1-10	20-40	---	25-50	---
Bluebunch wheatgrass	AGSP	X	X	20-50	20-30	---	15-30	---
Bluegrass	POA++	---	X	---	---	---	---	---
Basin wildrye	ELCI2	---	---	5-10	2-15	---	---	5-10
Mountain brome	BRCA5	---	---	2-15	---	---	---	---
Thurber needlegrass	STTH2	---	---	2-5	2-10	---	2-10	---
Bottlebrush squirreltail	SIHY	---	---	2-5	---	---	---	---
Spike fescue	LEKI2	---	---	---	---	---	2-10	---
Slender wheatgrass	AGTR	---	---	---	---	---	---	1-10
Nodding brome	BRAN	---	---	---	---	---	---	1-10
Slender hairgrass	DEEL	---	---	---	---	---	---	2-5
Other perennial grasses	PPGG	X	X	---	---	---	---	5-10
Tapertip hawksbeard	CRAC2	X	X	2-5	1-5	---	---	---
Arrowleaf balsamroot	BASA3	X	X	2-5	1-5	---	---	---
Balsamroot	BALSA	---	---	---	---	---	2-5	---
Other perennial forbs	PPFF	X	X	---	---	---	---	10-20
Big sagebrush	ARTR2	X	X	---	---	---	---	---
Mountain big sagebrush	ARVA2	---	---	5-15	5-15	---	---	---
Low sagebrush	ARAR8	---	---	---	---	---	10-20	---
Douglas rabbitbrush	CHVI8	---	---	---	---	---	2-5	---
Woods rose	ROWO	---	---	---	---	---	---	5-10
Common chokecherry	PRVI	---	---	---	---	---	---	5-10
Snowberry	SYMPH	---	---	---	---	---	---	2-5
Other shrubs	SSSS	X	X	---	---	---	---	5-10
Singleleaf pinyon	PIMO	X	X	---	---	---	---	---
Range site symbol	---	---	---	024X029N	024X021N	None	024X027N	028B025N
Woodland site symbol	025X061N	025X061N	---	---	---	None	---	---
Potential production (lb/acre):								
Favorable years	500	500	1,500	1,400	---	1,200	1,700	
Normal years	375	375	1,100	1,000	---	800	1,300	
Unfavorable years	250	250	800	700	---	600	900	

## 3135--Itca-Clanalpine-Rock outcrop association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Itca	Clanalpine	Rock outcrop	1	2	3
Idaho fescue	FEID	X	X	---	10-20	---	---
Bluebunch wheatgrass	AGSP	X	X	---	---	1-3	---
Bluegrass	POA++	X	X	---	---	---	10-30
Webber ricegrass	STWE	---	---	---	5-10	---	---
Bottlebrush squirreltail	SIHY	---	---	---	5-10	---	---
Cusick bluegrass	POCU3	---	---	---	2-5	---	---
Sandberg bluegrass	POSE	---	---	---	2-5	---	---
Pine bluegrass	POSC	---	---	---	2-5	2-5	---
Indian ricegrass	ORHY	---	---	---	---	5-15	---
Needleandthread	STCO4	---	---	---	---	5-15	---
Thurber needlegrass	STTH2	---	---	---	---	---	10-20
Other perennial grasses	PPGG	X	X	---	---	5-10	2-10
Tapertip hawksbeard	CRAC2	X	X	---	---	---	---
Arrowleaf balsamroot	BASA3	X	X	---	---	---	---
Goldenweed	HAPLO2	---	---	---	2-5	---	---
Phlox	PHLOX	---	---	---	2-5	---	---
Other perennial forbs	PPFF	X	X	---	---	5-15	5-10
Big sagebrush	ARTR2	X	X	---	---	---	15-25
Low sagebrush	ARAR8	---	---	---	5-15	---	---
Black sagebrush	ARARN	---	---	---	5-15	20-25	---
Mountain big sagebrush	ARVA2	---	---	---	1-5	---	---
Fourwing saltbush	ATCA2	---	---	---	---	2-5	---
Bud sagebrush	ARSP5	---	---	---	---	2-5	---
Other shrubs	SSSS	X	X	---	---	10-20	5-15
Singleleaf pinyon	PIMO	X	X	---	---	---	---
Range site symbol							
		---	---	None	024X016N	028B016N	027X054N
Woodland site symbol		025X061N	025X061N	None	---	---	---
Potential production (lb/acre):							
Favorable years		500	500	---	350	500	1,000
Normal years		375	375	---	250	250	800
Unfavorable years		250	250	---	150	150	600



## 3136--Itca-Roca-Reluctan association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Itca	Roca	Reluctan	1	2	3
Idaho fescue	FEID	X	---	20-40	---	---	---
Bluebunch wheatgrass	AGSP	X	40-60	20-30	---	---	---
Bluegrass	POA++	X	2-10	---	---	---	---
Thurber needlegrass	STTH2	---	5-10	2-10	---	---	---
Basin wildrye	ELCI2	---	2-5	2-15	50-60	---	---
Nevada bluegrass	PONE3	---	---	---	5-15	---	---
Mat muhly	MURI	---	---	---	2-10	---	---
Sedge	CAREX	---	---	---	1-5	---	---
Indian ricegrass	ORHY	---	---	---	---	20-30	---
Needleandthread	STCO4	---	---	---	---	10-20	---
Bottlebrush squirreltail	SIHY	---	---	---	---	5-10	---
Sandberg bluegrass	POSE	---	---	---	---	2-5	---
Other perennial grasses	PPGG	X	---	---	15-20	---	---
Tapertip hawksbeard	CRAC2	X	2-5	1-5	---	---	---
Arrowleaf balsamroot	BASA3	X	2-5	1-5	---	---	---
Other perennial forbs	PPFF	X	---	---	5-10	2-5	---
Big sagebrush	ARTR2	X	---	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	5-10	---	---	15-20	---
Mountain big sagebrush	ARVA2	---	T-5	5-15	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	10-15	---	---
Other shrubs	SSSS	X	---	---	2-5	5-15	---
Singleleaf pinyon	PIMO	X	---	---	---	---	---
Range site symbol	---	---	024X028N	024X021N	025X003N	028B010N	None
Woodland site symbol	025X061N	---	---	---	---	---	None
Potential production (lb/acre):							
Favorable years	500	1,000	1,400	2,500	800	---	---
Normal years	375	700	1,000	1,900	600	---	---
Unfavorable years	250	500	700	1,200	400	---	---

## 3137--Itca-Reluctan-Walti association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Itca	Reluctan	Walti	1	2	3	4
Idaho fescue	FEID	X	20-40	25-50	1-10	---	10-20	---
Bluebunch wheatgrass	AGSP	X	20-30	15-30	20-50	---	---	---
Bluegrass	POA++	X	---	---	---	---	---	---
Basin wildrye	ELCI2	---	2-15	---	5-10	---	---	50-60
Thurber needlegrass	STTH2	---	2-10	2-10	2-5	---	---	---
Spike fescue	LEKI2	---	---	2-10	---	---	---	---
Mountain brome	BRCA5	---	---	---	2-15	---	---	---
Bottlebrush squirreltail	SIHY	---	---	---	2-5	---	5-10	---
Webber ricegrass	STWE	---	---	---	---	---	5-10	---
Cusick bluegrass	POCU3	---	---	---	---	---	2-5	---
Sandberg bluegrass	POSE	---	---	---	---	---	2-5	---
Pine bluegrass	POSC	---	---	---	---	---	2-5	---
Nevada bluegrass	PONE3	---	---	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	---	---	1-5
Other perennial grasses	PPGG	X	---	---	---	---	---	15-20
Tapertip hawksbeard	CRAC2	X	1-5	---	2-5	---	---	---
Arrowleaf balsamroot	BASA3	X	1-5	---	2-5	---	---	---
Balsamroot	BALSA	---	---	2-5	---	---	---	---
Goldenweed	HAPLO2	---	---	---	---	---	2-5	---
Phlox	PHLOX	---	---	---	---	---	2-5	---
Other perennial forbs	PPFF	X	---	---	---	---	---	5-10
Big sagebrush	ARTR2	X	---	---	---	---	---	---
Mountain big sagebrush	ARVA2	---	5-15	---	5-15	---	1-5	---
Low sagebrush	ARAR8	---	---	10-20	---	---	5-15	---
Douglas rabbitbrush	CHVI8	---	---	2-5	---	---	---	---
Black sagebrush	ARARN	---	---	---	---	---	5-15	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	---	10-15
Other shrubs	SSSS	X	---	---	---	---	---	2-5
Singleleaf pinyon	PIMO	X	---	---	---	---	---	---

Range site symbol	---	024X021N	024X027N	024X029N	None	024X016N	025X003N
Woodland site symbol	025X061N	---	---	---	None	---	---
Potential production (lb/acre):							
Favorable years	500	1,400	1,200	1,500	---	350	2,500
Normal years	375	1,000	800	1,100	---	250	1,900
Unfavorable years	250	700	600	800	---	150	1,200

## 3140--Sodhouse-Tenabo-Desatoya Variant association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Sodhouse	Tenabo	Desatoya Variant	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	---	5-10	5-15	---
Indian ricegrass	ORHY	5-15	5-15	10-15	20-30	5-15	10-15
Sandberg bluegrass	POSE	2-5	2-5	---	2-5	2-5	---
Needleandthread	STCO4	1-3	1-3	---	10-20	1-3	---
Thurber needlegrass	STTH2	---	---	10-15	---	---	10-15
Bluegrass	POA++	---	---	2-10	---	---	2-10
Other perennial grasses	PPGG	---	---	5-20	---	---	5-20
Globemallow	SPHAE	---	---	2-5	---	---	2-5
Other perennial forbs	PPFF	2-8	2-8	---	2-5	2-8	---
Shadscale	ATCO	30-40	30-40	---	---	30-40	---
Bud sagebrush	ARSP5	20-30	20-30	---	---	20-30	---
Spiny hopsage	GRSP	2-5	2-5	---	---	2-5	---
Winterfat	EULA5	2-5	2-5	---	---	2-5	---
Black sagebrush	ARARN	---	---	25-35	---	---	25-35
Wyoming big sagebrush	ARTRW*	---	---	---	15-20	---	---
Other shrubs	SSSS	2-5	2-5	5-35	5-15	2-5	5-35

Range site symbol	O24X002N	O24X002N	O24X030N	O28B010N	O24X002N	O24X030N
Potential production (lb/acre):						
Favorable years	700	700	500	800	700	500
Normal years	450	450	350	600	450	350
Unfavorable years	300	300	250	400	300	250

## 3151--Robson-Ninemile-Ravenswood association

X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Robson	Ninemile	Ravenswood	1	2	3	4
Archer needlegrass	STTH2	5-15	2-5	---	---	5-10	---	---
Indian ricegrass	ORHY	5-10	2-5	---	---	---	---	---
Albino bluegrass	POSE	5-10	---	---	---	---	---	---
Shrub wheatgrass	AGSP	2-5	5-15	X	---	10-15	---	---
Shrub squirreltail	SIHY	2-5	2-5	---	---	---	---	---
Shrub bluegrass	POSC	---	5-10	---	---	---	---	---
Shrub fescue	FEID	---	---	X	---	---	---	---
Shrubgrass	POA++	---	---	X	---	---	---	---
Shrub wildrye	ELCI2	---	---	---	---	5-10	30-50	---
Shrub bluegrass	PONE3	---	---	---	---	---	2-5	---
Shrub wheatgrass	AGSM	---	---	---	---	---	2-5	---
Shrub perennial grasses	PPGG	---	10-15	X	---	10-15	15-25	---
Shrub hawkbeard	CRAC2	---	---	X	---	---	---	---
Shrub leaf balsamroot	BASA3	---	---	X	---	---	---	---
Shrub perennial forbs	PPFF	5-10	10-15	X	---	5-15	2-5	---
Shrub sagebrush	ARAR8	25-30	25-30	---	---	---	---	---
Shrub sagebrush	ARTR2	---	---	X	---	---	---	---
Shrub big sagebrush	ARVA2	---	---	---	---	15-25	---	---
Shrub serviceberry	AMUT	---	---	---	---	3-10	---	---
Shrub bitterbrush	PUTR2	---	---	---	---	2-8	---	---
Shrub big sagebrush	ARTRT*	---	---	---	---	---	5-10	---
Shrub shrubs	SSSS	10-15	10-20	X	---	15-20	5-10	---
Shrub leaf pinyon	PIMO	---	---	X	---	---	---	---

Site symbol	028B045N	028B037N	---	None	028B027N	028B003N	None
Land site symbol	---	---	025X061N	None	---	---	None
Annual production (lb/acre):							
Grassable years	800	700	500	---	900	2,600	---
Shrubal years	600	500	375	---	600	2,250	---
Shrub favorable years	400	300	250	---	300	800	---

## 3153--Robson-Locane-Softscrabble association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Robson	Locane	Softscrabble	1	2	3
Bluebunch wheatgrass	AGSP	15-20	5-10	20-30	---	---	---
Thurber needlegrass	STTH2	15-20	20-50	2-10	---	---	---
Webber ricegrass	STWE	5-10	---	---	---	---	---
Sandberg bluegrass	POSE	5-8	---	---	---	---	---
Pine bluegrass	POSC	5-8	---	---	---	---	---
Cusick bluegrass	POCU3	5-8	---	---	---	---	---
Idaho fescue	FEID	---	---	20-40	---	---	---
Basin wildrye	ELCI2	---	---	2-15	30-50	---	---
Western wheatgrass	AGSM	---	---	---	5-10	---	---
Nevada bluegrass	PONE3	---	---	---	5-10	---	---
Other perennial grasses	PPGG	---	---	---	5-15	---	---
Balsamroot	BALSA	2-5	2-4	---	---	---	---
Eriogonum	ERIOG	1-3	---	---	---	---	---
Phlox	PHLOX	1-3	---	---	---	---	---
Tapertip hawksbeard	CRAC2	---	2-4	1-5	---	---	---
Arrowleaf balsamroot	BASA3	---	---	1-5	---	---	---
Other perennial forbs	PPFF	---	---	---	5-10	---	---
Low sagebrush	ARAR8	20-30	---	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	15-20	---	---	---	---
Downy rabbitbrush	CHVIP	---	2-5	---	---	---	---
Spiny hopsage	GRSP	---	2-5	---	---	---	---
Mountain big sagebrush	ARVA2	---	---	5-15	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	5-10	---	---
Rubber rabbitbrush	CHNA2	---	---	---	2-5	---	---
Other shrubs	SSSS	---	2-10	---	5-10	---	---
Range site symbol		024X018N	024X005N	024X021N	028B024N	None	None
Potential production (lb/acre):							
Favorable years		700	800	1,400	2,800	---	---
Normal years		500	600	1,000	1,700	---	---
Unfavorable years		300	400	700	1,000	---	---

## 3154--Robson-Locane-Rock outcrop association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Robson	Locane	Rock outcrop	1	2	3
Bluebunch wheatgrass	AGSP	15-20	5-10	---	---	15-30	X
Thurber needlegrass	STTH2	15-20	20-50	---	---	2-10	---
Webber ricegrass	STWE	5-10	---	---	---	---	---
Sandberg bluegrass	POSE	5-8	---	---	---	---	---
Pine bluegrass	POSC	5-8	---	---	---	---	---
Cusick bluegrass	POCU3	5-8	---	---	---	---	---
Basin wildrye	ELCI2	---	---	---	50-60	---	---
Nevada bluegrass	PONE3	---	---	---	5-15	---	---
Mat muhly	MURI	---	---	---	2-10	---	---
Sedge	CAREX	---	---	---	1-5	---	---
Idaho fescue	FEID	---	---	---	---	25-50	X
Spike fescue	LEKI2	---	---	---	---	2-10	---
Bluegrass	POA++	---	---	---	---	---	X
Other perennial grasses	PPGG	---	---	---	15-20	---	X
Balsamroot	BALSA	2-5	2-4	---	---	2-5	---
Eriogonum	ERIOG	1-3	---	---	---	---	---
Phlox	PHLOX	1-3	---	---	---	---	---
Tapertip hawksbeard	CRAC2	---	2-4	---	---	---	X
Arrowleaf balsamroot	BASA3	---	---	---	---	---	X
Other perennial forbs	PPFF	---	---	---	5-10	---	X
Low sagebrush	ARAR8	20-30	---	---	---	10-20	---
Wyoming big sagebrush	ARTRW*	---	15-20	---	---	---	---
Downy rabbitbrush	CHVIP	---	2-5	---	---	---	---
Spiny hopsage	GRSP	---	2-5	---	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	10-15	---	---
Douglas rabbitbrush	CHVI8	---	---	---	---	2-5	---
Big sagebrush	ARTR2	---	---	---	---	---	X
Other shrubs	SSSS	---	2-10	---	2-5	---	X
Singleleaf pinyon	PIMO	---	---	---	---	---	X
Range site symbol		024X018N	024X005N	None	025X003N	024X027N	---
Woodland site symbol		---	---	None	---	---	025X061N
Potential production (lb/acre):							
Favorable years		700	800	---	2,500	1,200	500
Normal years		500	600	---	1,900	800	375
Unfavorable years		300	400	---	1,200	600	250

## 3155--Robson-Itca-Softscrabble association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Robson	Itca	Softscrabble	1	2	3	4
Bluebunch wheatgrass	AGSP	15-20	X	20-30	20-30	---	---	X
Thurber needlegrass	STTH2	15-20	---	2-10	15-25	---	---	X
Webber ricegrass	STWE	5-10	---	---	---	---	---	---
Sandberg bluegrass	POSE	5-8	---	---	---	---	---	---
Pine bluegrass	POSC	5-8	---	---	---	---	---	---
Cusick bluegrass	POCU3	5-8	---	---	---	---	---	---
Idaho fescue	FEID	---	X	20-40	---	---	---	X
Bluegrass	POA++	---	X	---	---	---	---	---
Basin wildrye	ELCI2	---	---	2-15	---	---	30-50	X
Nevada bluegrass	PONE3	---	---	---	2-10	---	5-10	X
Western wheatgrass	AGSM	---	---	---	---	---	5-10	---
Other perennial grasses	PPGG	---	X	---	10-15	---	5-15	---
Balsamroot	BALSA	2-5	---	---	---	---	---	---
Eriogonum	ERIOG	1-3	---	---	---	---	---	---
Phlox	PHLOX	1-3	---	---	---	---	---	---
Tapertip hawksbeard	CRAC2	---	X	1-5	2-5	---	---	X
Arrowleaf balsamroot	BASA3	---	X	1-5	2-5	---	---	X
Other perennial forbs	PPFF	---	X	---	2-5	---	5-10	---
Low sagebrush	ARAR8	20-30	---	---	---	---	---	---
Big sagebrush	ARTR2	---	X	---	10-15	---	---	X
Mountain big sagebrush	ARVA2	---	---	5-15	---	---	---	---
Antelope bitterbrush	PUTR2	---	---	---	0-10	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	5-10	---
Rubber rabbitbrush	CHNA2	---	---	---	---	---	2-5	---
Snowberry	SYMPH	---	---	---	---	---	---	X
Currant	RIBES	---	---	---	---	---	---	X
Other shrubs	SSSS	---	X	---	5-10	---	5-10	---
Singleleaf pinyon	PIMO	---	X	---	---	---	---	X
Utah juniper	JUOS	---	---	---	---	---	---	X
Range site symbol	O24X018N	---	---	O24X021N	O25X014N	None	O28B024N	---
Woodland site symbol	---	O25X061N	---	---	---	None	---	O25X062N
Potential production (lb/acre):								
Favorable years		700	500	1,400	1,000	---	2,800	500
Normal years		500	375	1,000	800	---	1,700	350
Unfavorable years		300	250	700	600	---	1,000	200

## 3170--Teguro-Rubble land-Punchbowl association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Teguro	Rubble land	Punchbowl	1	2	3
Bluebunch wheatgrass	AGSP	X	---	---	---	X	---
Basin wildrye	ELCI2	X	---	---	---	X	---
Thurber needlegrass	STTH2	X	---	10-15	10-15	X	---
Nevada bluegrass	PONE3	X	---	---	---	X	---
Idaho fescue	FEID	X	---	---	---	X	---
Indian ricegrass	ORHY	---	---	10-15	10-15	---	---
Bluegrass	POA++	---	---	2-10	2-10	---	---
Other perennial grasses	PPGG	---	---	5-20	5-20	---	---
Tapertip hawksbeard	CRAC2	X	---	---	---	X	---
Arrowleaf balsamroot	BASA3	X	---	---	---	X	---
Globemallow	SPHAE	---	---	2-5	2-5	---	---
Big sagebrush	ARTR2	X	---	---	---	X	---
Snowberry	SYMPH	X	---	---	---	X	---
Currant	RIBES	X	---	---	---	X	---
Black sagebrush	ARARN	---	---	25-35	25-35	---	---
Other shrubs	SSSS	---	---	5-35	5-35	---	---
Singleleaf pinyon	PIMO	X	---	---	---	X	---
Utah juniper	JUOS	X	---	---	---	X	---

Range site symbol	---	None	024X030N	024X030N	---	None
Woodland site symbol	025X062N	None	---	---	025X062N	None
Potential production (lb/acre):						
Favorable years	500	---	500	500	500	---
Normal years	350	---	350	350	350	---
Unfavorable years	200	---	250	250	200	---



## 3181--Newlands-Packer-Hapgood association, moderately steep

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Newlands	Packer	Hapgood	1	2	3
Mountain brome	BRCA5	15-20	---	10-15	---	---	---
Idaho fescue	FEID	10-15	10-20	5-15	10-20	---	X
Letterman needleggrass	STLE4	5-10	---	---	---	---	---
Spike fescue	LEKI2	5-10	---	2-15	---	---	---
Webber ricegrass	STWE	---	5-10	---	5-10	---	---
Bottlebrush squirreltail	SIHY	---	5-10	---	5-10	---	---
Cusick bluegrass	POCU3	---	2-5	---	2-5	---	---
Sandberg bluegrass	POSE	---	2-5	---	2-5	---	---
Pine bluegrass	POSC	---	2-5	---	2-5	---	---
Slender wheatgrass	AGTR	---	---	20-30	---	---	X
Bluebunch wheatgrass	AGSP	---	---	5-10	---	---	---
Bulbous oniongrass	MEBU	---	---	2-5	---	---	X
Nevada bluegrass	PONE3	---	---	2-5	---	---	---
Mountain brome	BRCA5	---	---	---	---	---	X
Other perennial grasses	PPGG	5-15	---	---	---	---	X
Goldenweed	HAPLO2	---	2-5	---	2-5	---	---
Phlox	PHLOX	---	2-5	---	2-5	---	---
Geranium	GERAN	---	---	2-5	---	---	X
Groundsel	SENEC	---	---	2-5	---	---	---
Lupine	LUPIN	---	---	2-5	---	---	X
Horsemint	AGUR	---	---	---	---	---	X
Columbine	AQUIL	---	---	---	---	---	X
Meadowrue	THALI2	---	---	---	---	---	X
Sweet cicely	OSMOR	---	---	---	---	---	X
Other perennial forbs	PPFF	5-10	---	---	---	---	X
Mountain big sagebrush	ARVA2	10-20	1-5	5-10	1-5	---	---
Utah serviceberry	AMUT	5-10	---	---	---	---	---
Snowberry	SYMPH	5-10	---	2-10	---	---	X
Low sagebrush	ARAR8	---	5-15	---	5-15	---	---
Black sagebrush	ARARN	---	5-15	---	5-15	---	---
Serviceberry	AMELA	---	---	5-10	---	---	---
Big sagebrush	ARTR2	---	---	---	---	---	X
Currant	RIBES	---	---	---	---	---	X
Other shrubs	SSSS	---	---	---	---	---	X
Quaking aspen	POTR5	---	---	---	---	---	X
Range site symbol		028B029N	024X016N	024X032N	024X016N	None	---
Woodland site symbol		---	---	---	---	None	025X065N
Potential production (lb/acre):							
Favorable years		1,500	350	2,200	350	---	800
Normal years		900	250	1,700	250	---	600
Unfavorable years		650	150	1,200	150	---	400

## 3182--Newlands-Packer-Hapgood association, strongly sloping

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Newlands	Packer	Hapgood	1	2	3
Mountain brome	BRCA5	15-20	---	10-15	---	---	---
Idaho fescue	FEID	10-15	10-20	5-15	---	10-20	---
Letterman needlegrass	STLE4	5-10	---	---	---	---	---
Spike fescue	LEKI2	5-10	---	2-15	---	---	---
Webber ricegrass	STWE	---	5-10	---	---	5-10	---
Bottlebrush squirreltail	SIHY	---	5-10	---	---	5-10	---
Cusick bluegrass	POCU3	---	2-5	---	---	2-5	---
Sandberg bluegrass	POSE	---	2-5	---	---	2-5	---
Pine bluegrass	POSC	---	2-5	---	---	2-5	---
Slender wheatgrass	AGTR	---	---	20-30	---	---	---
Bluebunch wheatgrass	AGSP	---	---	5-10	---	---	---
Bulbous oniongrass	MEBU	---	---	2-5	---	---	---
Nevada bluegrass	PONE3	---	---	2-5	---	---	5-10
Tufted hairgrass	DECA5	---	---	---	---	---	30-60
Alpine timothy	PHAL2	---	---	---	---	---	5-10
Sedge	CAREX	---	---	---	---	---	5-10
Meadow barley	HOBR2	---	---	---	---	---	2-5
Other perennial grasses	PPGG	5-15	---	---	---	---	2-10
Goldenweed	HAPLO2	---	2-5	---	---	2-5	---
Phlox	PHLOX	---	2-5	---	---	2-5	---
Geranium	GERAN	---	---	2-5	---	---	---
Groundsel	SENEC	---	---	2-5	---	---	---
Lupine	LUPIN	---	---	2-5	---	---	---
Sierra clover	TRWO	---	---	---	---	---	2-5
Cinquefoil	POTEN	---	---	---	---	---	2-5
Other perennial forbs	PPFF	5-10	---	---	---	---	10-20
Mountain big sagebrush	ARVA2	10-20	1-5	5-10	---	1-5	---
Utah serviceberry	AMUT	5-10	---	---	---	---	---
Snowberry	SYMPH	5-10	---	2-10	---	---	---
Low sagebrush	ARAR8	---	5-15	---	---	5-15	---
Black sagebrush	ARARN	---	5-15	---	---	5-15	---
Serviceberry	AMELA	---	---	5-10	---	---	---
Willow	SALIX	---	---	---	---	---	2-5
Other shrubs	SSSS	---	---	---	---	---	2-5

Range site symbol	028B029N	024X016N	024X032N	None	024X016N	025X005N
Potential production (lb/acre):						
Favorable years	1,500	350	2,200	---	350	2,000
Normal years	900	250	1,700	---	250	1,700
Unfavorable years	650	150	1,200	---	150	1,000

## 3190--Softscrabble-Clanalpine-Walti association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Softscrabble	Clanalpine	Walti	1	2	3	4
Idaho fescue	FEID	20-40	X	25-50	X	---	10-20	---
Bluebunch wheatgrass	AGSP	20-30	X	15-30	X	---	---	---
Basin wildrye	ELCI2	2-15	---	---	X	20-40	---	---
Thurber needlegrass	STTH2	2-10	---	2-10	X	---	---	---
Bluegrass	POA++	---	X	---	---	---	---	---
Spike fescue	LEKI2	---	---	2-10	---	---	---	---
Nevada bluegrass	PONE3	---	---	---	X	---	---	---
Webber ricegrass	STWE	---	---	---	---	---	5-10	---
Bottlebrush squirreltail	SIHY	---	---	---	---	---	5-10	---
Cusick bluegrass	POCU3	---	---	---	---	---	2-5	---
Sandberg bluegrass	POSE	---	---	---	---	---	2-5	---
Pine bluegrass	POSC	---	---	---	---	---	2-5	---
Other perennial grasses	PPGG	---	X	---	---	---	---	---
Tapertip hawksbeard	CRAC2	1-5	X	---	X	---	---	---
Arrowleaf balsamroot	BASA3	1-5	X	---	X	---	---	---
Balsamroot	BALSA	---	---	2-5	---	---	---	---
Goldenweed	HAPLO2	---	---	---	---	---	2-5	---
Phlox	PHLOX	---	---	---	---	---	2-5	---
Other perennial forbs	PPFF	---	X	---	---	2-8	---	---
Mountain big sagebrush	ARVA2	5-15	---	---	---	---	1-5	---
Big sagebrush	ARTR2	---	X	---	X	---	---	---
Low sagebrush	ARAR8	---	---	10-20	---	---	5-15	---
Douglas rabbitbrush	CHVI8	---	---	2-5	---	---	---	---
Snowberry	SYMPH	---	---	---	X	---	---	---
Currant	RIBES	---	---	---	X	---	---	---
Torrey quailbush	ATTO	---	---	---	---	30-50	---	---
Black greasewood	SAVE4	---	---	---	---	5-15	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	2-10	---	---
Black sagebrush	ARARN	---	---	---	---	---	5-15	---
Other shrubs	SSSS	---	X	---	---	---	---	---
Singleleaf pinyon	PIMO	---	X	---	X	---	---	---
Utah juniper	JUOS	---	---	---	X	---	---	---

Range site symbol	O24X021N	---	O24X027N	---	O24X015N	O24XC16N	None
Woodland site symbol	---	O25X061N	---	O25X027N	---	---	None
Potential production (lb/acre):							
Favorable years	1,400	500	1,200	500	1,500	350	---
Normal years	1,000	375	800	350	1,200	250	---
Unfavorable years	700	250	600	200	800	150	---

## 3192--Softscrabble-Walti-Cleavage association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Softscrabble	Walti	Cleavage	1	2	3	4
Idaho fescue	FEID	20-40	25-50	10-20	X	1-10	---	---
Bluebunch wheatgrass	AGSP	20-30	15-30	---	X	20-50	---	---
Basin wildrye	ELCI2	2-15	---	---	---	5-10	---	---
Thurber needlegrass	STTH2	2-10	2-10	---	---	2-5	---	---
Spike fescue	LEKI2	---	2-10	---	---	---	---	---
Webber ricegrass	STWE	---	---	5-10	---	---	---	---
Bottlebrush squirreltail	SIHY	---	---	5-10	---	2-5	---	---
Cusick bluegrass	POCU3	---	---	2-5	---	---	---	---
Sandberg bluegrass	POSE	---	---	2-5	---	---	---	---
Pine bluegrass	POSC	---	---	2-5	---	---	---	---
Bluegrass	POA++	---	---	---	X	---	---	---
Mountain brome	BRCA5	---	---	---	---	2-15	---	---
Other perennial grasses	PPGG	---	---	---	X	---	---	---
Tapertip hawksbeard	CRAC2	1-5	---	---	X	2-5	---	---
Arrowleaf balsamroot	BASA3	1-5	---	---	X	2-5	---	---
Balsamroot	BALSA	---	2-5	---	---	---	---	---
Goldenweed	HAPLO2	---	---	2-5	---	---	---	---
Phlox	PHLOX	---	---	2-5	---	---	---	---
Other perennial forbs	PPFF	---	---	---	X	---	---	---
Mountain big sagebrush	ARVA2	5-15	---	1-5	---	5-15	---	---
Low sagebrush	ARAR8	---	10-20	5-15	---	---	---	---
Douglas rabbitbrush	CHVI8	---	2-5	---	---	---	---	---
Black sagebrush	ARARN	---	---	5-15	---	---	---	---
Big sagebrush	ARTR2	---	---	---	X	---	---	---
Other shrubs	SSSS	---	---	---	X	---	---	---
Singleleaf pinyon	PIMO	---	---	---	X	---	---	---

Range site symbol	024X021N	024X027N	024X016N	---	024X029N	None	None
Woodland site symbol	---	---	---	025X061N	---	None	None
Potential production (lb/acre):							
Favorable years	1,400	1,200	350	500	1,500	---	---
Normal years	1,000	800	250	375	1,100	---	---
Unfavorable years	700	600	150	250	800	---	---

## 3200--Dewar gravelly loam, 2 to 8 percent slopes

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Dewar	1	2	3
Indian ricegrass	ORHY	20-30	20-30	20-30	20-30
Needleandthread	STCO4	10-20	10-20	10-20	10-20
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	5-10
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5
Perennial forbs	PPFF	2-5	2-5	2-5	2-5
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	15-20
Other shrubs	SSSS	5-15	5-15	5-15	5-15
Range site symbol		028B010N	028B010N	028B010N	028B010N
Potential production (lb/acre):					
Favorable years		800	800	800	800
Normal years		600	600	600	600
Unfavorable years		400	400	400	400

## 3210--Typic Argixerolls-Torripsammentic Haploxerolls-Glean association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Typic Argixerolls	Torripsammentic Haploxerolls	Glean	1	2	3
Idaho fescue	FEID	20-40	X	30-60	20-40	---	---
Bluebunch wheatgrass	AGSP	20-30	X	5-10	20-30	20-30	---
Basin wildrye	ELCI2	2-15	---	---	2-15	---	---
Thurber needlegrass	STTH2	2-10	---	---	2-10	15-25	---
Bluegrass	POA++	---	X	---	---	---	---
Cusick bluegrass	POCU3	---	---	5-10	---	---	---
Mountain brome	BRCA5	---	---	2-5	---	---	---
Sedge	CAREX	---	---	2-5	---	---	---
Nevada bluegrass	PONE3	---	---	---	---	2-10	---
Other perennial grasses	PPGG	---	X	---	---	10-15	---
Tapertip hawksbeard	CRAC2	1-5	X	1-3	1-5	2-5	---
Arrowleaf balsamroot	BASA3	1-5	X	---	1-5	2-5	---
Lupine	LUPIN	---	---	1-2	---	---	---
Other perennial forbs	PPFF	---	X	---	---	2-5	---
Mountain big sagebrush	ARVA2	5-15	---	5-15	5-15	---	---
Big sagebrush	ARTR2	---	X	---	---	10-15	---
Snowberry	SYMPH	---	---	2-5	---	---	---
Antelope bitterbrush	PUTR2	---	---	---	---	0-10	---
Other shrubs	SSSS	---	X	---	---	5-10	---
Singleleaf pinyon	PIMO	---	X	---	---	---	---
Range site symbol		024X021N	---	024X023N	024X021N	025X014N	None
Woodland site symbol		---	025X061N	---	---	---	None
Potential production (lb/acre):							
Favorable years		1,400	500	1,500	1,400	1,000	---
Normal years		1,000	375	1,200	1,000	800	---
Unfavorable years		700	250	900	700	600	---

## 3231--Stingdorn-Hooplite association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Stingdorn, moderately steep	Stingdorn, moderately sloping	Hooplite	1	2	3
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	5-15	---
Needleandthread	STCO4	5-10	5-10	5-15	---	5-15	---
Bottlebrush squirreltail	SIHY	2-5	2-5	---	---	---	---
Pine bluegrass	POSC	---	---	2-5	---	2-5	---
Bluebunch wheatgrass	AGSP	---	---	1-3	---	1-3	---
Galleta	HIJA	---	---	---	5-20	---	---
Needlegrass	STIPA	---	---	---	5-10	---	---
Other perennial grasses	PPGG	5-10	5-10	5-10	5-10	5-10	---
Perennial forbs	PPFF	5-10	5-10	5-15	5-10	5-15	---
Shadscale	ATCO	30-40	30-40	---	15-25	---	---
Bud sagebrush	ARSP5	5-10	5-10	2-5	---	2-5	---
Winterfat	EULA5	2-5	2-5	---	---	---	---
Fourwing saltbush	ATCA2	2-5	2-5	2-5	---	2-5	---
Black sagebrush	ARARN	---	---	20-25	---	20-25	---
Bailey greasewood	SAVEB	---	---	---	5-15	---	---
Nevada ephedra	EPNE	---	---	---	2-5	---	---
Other shrubs	SSSS	5-15	5-15	10-20	10-20	10-20	---

Range site symbol	028B017N	028B017N	028B016N	029X022N	028B016N	None
Potential production (lb/acre):						
Favorable years	700	700	500	300	500	---
Normal years	500	500	250	200	250	---
Unfavorable years	250	250	150	100	150	---

## 3251--Caphor-Tenabo-Spaspri association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Caphor	Tenabo	Spaspri	1	2
Indian ricegrass	ORHY	5-15	5-15	20-30	20-30	15-25
Needleandthread	STCO4	5-10	5-10	10-20	10-20	---
Bottlebrush squirreltail	SIHY	2-5	2-5	5-10	5-10	2-5
Sandberg bluegrass	POSE	---	---	2-5	2-5	---
Thurber needlegrass	STTH2	---	---	---	---	5-10
Other perennial grasses	PPGG	5-10	5-10	---	---	---
Scarlet globemallow	SPCO	---	---	---	---	2-5
Other perennial forbs	PPFF	5-10	5-10	2-5	2-5	---
Shadscale	ATCO	30-40	30-40	---	---	---
Bud sagebrush	ARSP5	5-10	5-10	---	---	5-10
Winterfat	EULA5	2-5	2-5	---	---	---
Fourwing saltbush	ATCA2	2-5	2-5	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	15-20	15-20	15-25
Spiny hopsage	GRSP	---	---	---	---	20-30
Other shrubs	SSSS	5-15	5-15	5-15	5-15	5-10

Range site symbol	028B017N	028B017N	028B010N	028B010N	028B052N
Potential production (lb/acre):					
Favorable years	700	700	800	800	600
Normal years	500	500	600	600	400
Unfavorable years	250	250	400	400	300



## 3252--Caphor-Batan-Unsel association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Caphor	Batan	Unsel	1	2
Bottlebrush squirreltail	SIHY	5-10	5-10	2-5	5-10	---
Galleta	HIJA	---	---	10-25	---	---
Indian ricegrass	ORHY	---	---	5-10	---	---
Desert needlegrass	STSP3	---	---	2-5	---	---
Basin wildrye	ELCI2	---	---	---	---	50-60
Western wheatgrass	AGSM	---	---	---	---	5-15
Other perennial grasses	PPGG	T-10	T-10	---	T-10	---
Perennial forbs	PPFF	2-8	2-8	4-10	2-8	2-8
Shadscale	ATCO	30-50	30-50	10-25	30-50	---
Black greasewood	SAVE4	15-30	15-30	---	15-30	2-10
Bud sagebrush	ARSP5	5-15	5-15	5-10	5-15	---
Seepweed	SUAED	2-15	2-15	---	2-15	---
Bailey greasewood	SAVEB	---	---	5-15	---	---
Winterfat	EULA5	---	---	5-10	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	15-20
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5
Range site symbol		024X003N	024X003N	029X017N	024X003N	024X006N
Potential production (lb/acre):						
Favorable years		600	600	350	600	1,500
Normal years		450	450	250	450	1,100
Unfavorable years		300	300	100	300	600

## 3253--Caphor association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Caphor	Caphor, moderately saline	1	2
Indian ricegrass	ORHY	5-15	---	20-30	5-15
Needleandthread	STCO4	5-10	---	10-20	---
Bottlebrush squirreltail	SIHY	2-5	5-10	5-10	2-10
Sandberg bluegrass	POSE	---	---	2-5	2-5
Other perennial grasses	PPGG	5-10	T-10	---	---
Globemallow	SPHAE	---	---	---	1-4
Phlox	PHLOX	---	---	---	1-4
Other perennial forbs	PPFF	5-10	2-8	2-5	---
Shadscale	ATCO	30-40	30-50	---	2-5
Bud sagebrush	ARSP5	5-10	5-15	---	20-30
Winterfat	EULA5	2-5	---	---	20-40
Fourwing saltbush	ATCA2	2-5	---	---	---
Black greasewood	SAVE4	---	15-30	---	---
Seepweed	SUAED	---	2-15	---	---
Wyoming big sagebrush	ARTRW*	---	---	15-20	---
Other shrubs	SSSS	5-15	---	5-15	---

Range site symbol	028B017N	024X003N	028B010N	024X014N
Potential production (lb/acre):				
Favorable years	700	600	800	400
Normal years	500	450	600	300
Unfavorable years	250	300	400	200

## 3270--Koyen fine sandy loam, 2 to 4 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions	
		Soil name	Inclusion number--
		Koyen	1
Galleta	HIJA	10-25	---
Indian ricegrass	ORHY	5-10	5-10
Bottlebrush squirreltail	SIHY	2-5	---
Desert needlegrass	STSP3	2-5	---
Other perennial grasses	PPGG	---	5-10
Perennial forbs	PPFF	4-10	2-6
Shadscale	ATCO	10-25	---
Bailey greasewood	SAVEB	5-15	2-10
Bud sagebrush	ARSP5	5-10	---
Winterfat	EULA5	5-10	---
Rubber rabbitbrush	CHNA2	---	10-25
Fourwing saltbush	ATCA2	---	5-15
Burrobrush	HYMEN3	---	5-10
Littleleaf horsebrush	TEGL	---	5-10
Other shrubs	SSSS	---	10-20

Range site symbol	029X017N	029X041N
Potential production (lb/acre):		
Favorable years	350	500
Normal years	250	300
Unfavorable years	100	100

## 3310--Spasprey-Allor association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Spasprey	Allor	1	2	3
Indian ricegrass	ORHY	20-30	20-30	20-30	5-15	10-20
Needleandthread	STCO4	10-20	10-20	10-20	---	---
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	5-10	2-10
Sandberg bluegrass	POSE	2-5	2-5	2-5	---	---
Pine bluegrass	POSC	---	---	---	5-15	---
Other perennial grasses	PPGG	---	---	---	5-10	---
Perennial forbs	PPFF	2-5	2-5	2-5	5-10	2-8
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	10-20	---
Spiny hopsage	GRSP	---	---	---	10-20	---
Nevada ephedra	EPNE	---	---	---	5-10	---
Winterfat	EULA5	---	---	---	---	60-70
Bud sagebrush	ARSP5	---	---	---	---	2-5
Other shrubs	SSSS	5-15	5-15	5-15	---	---

Range site symbol	028B010N	028B010N	028B010N	027X008N	024X004N
Potential production (lb/acre):					
Favorable years	800	800	800	700	500
Normal years	600	600	600	500	350
Unfavorable years	400	400	400	300	200

## 3312--Spasprey-Buffaran-Orovada association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Spasprey	Buffaran	Orovada	1	2	3
Indian ricegrass	ORHY	20-30	20-30	20-30	20-30	15-25	15-30
Needleandthread	STCO4	10-20	10-20	10-20	10-20	5-10	---
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	5-10	---	---
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	---	---
Basin wildrye	ELCI2	---	---	---	---	2-5	---
Bluebunch wheatgrass	AGSP	---	---	---	---	2-5	---
Thurber needlegrass	STTH2	---	---	---	---	---	5-10
Other perennial grasses	PPGG	---	---	---	---	---	5-15
Globemallow	SPHAE	---	---	---	---	---	2-4
Other perennial forbs	PPFF	2-5	2-5	2-5	2-5	5-10	---
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	15-20	---	15-30
Black sagebrush	ARARN	---	---	---	---	20-30	---
Winterfat	EULA5	---	---	---	---	5-10	---
Bud sagebrush	ARSP5	---	---	---	---	2-5	---
Small rabbitbrush	CHVIS	---	---	---	---	2-5	---
Spiny hopsage	GRSP	---	---	---	---	---	2-5
Shadscale	ATCO	---	---	---	---	---	2-5
Other shrubs	SSSS	5-15	5-15	5-15	5-15	---	2-5
Range site symbol		O28B010N	O28B010N	O28B010N	O28B010N	O28B011N	O24X045N
Potential production (lb/acre):							
Favorable years		800	800	800	800	950	350
Normal years		600	600	600	600	700	200
Unfavorable years		400	400	400	400	400	100

## 3314--Spasprey-Allor-Orovada association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Spasprey	Allor	Orovada	1	2	3
Indian ricegrass	ORHY	20-30	20-30	20-30	20-30	20-30	5-15
Needleandthread	STCO4	10-20	10-20	10-20	10-20	10-20	1-3
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	5-10	5-10	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	2-5	2-5
Perennial forbs	PPFF	2-5	2-5	2-5	2-5	2-5	2-8
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	15-20	15-20	---
Shadscale	ATCO	---	---	---	---	---	30-40
Bud sagebrush	ARSP5	---	---	---	---	---	20-30
Spiny hopsage	GRSP	---	---	---	---	---	2-5
Winterfat	EULA5	---	---	---	---	---	2-5
Other shrubs	SSSS	5-15	5-15	5-15	5-15	5-15	2-5

Range site symbol	028B010N	028B010N	028B010N	028B010N	028B010N	024X002N
Potential production (lb/acre):						
Favorable years	800	800	800	800	800	700
Normal years	600	600	600	600	600	450
Unfavorable years	400	400	400	400	400	300

## 3341--Halacan-Hatur-Rock outcrop association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Halacan	Hatur	Rock outcrop	1	2
Idaho fescue	FEID	10-20	10-15	---	30-60	---
Webber ricegrass	STWE	5-10	---	---	---	---
Bottlebrush squirreltail	SIHY	5-10	---	---	---	---
Cusick bluegrass	POCU3	2-5	---	---	5-10	---
Sandberg bluegrass	POSE	2-5	---	---	---	---
Pine bluegrass	POSC	2-5	---	---	---	---
Mountain brome	BRCA5	---	15-20	---	---	---
Letterman needlegrass	STLE4	---	5-10	---	---	---
Spike fescue	LEKI2	---	5-10	---	---	---
Bluebunch wheatgrass	AGSP	---	---	---	2-10	---
Basin wildrye	ELCI2	---	---	---	---	30-50
Western wheatgrass	AGSM	---	---	---	---	5-10
Nevada bluegrass	PONE3	---	---	---	---	5-10
Other perennial grasses	PPGG	---	5-15	---	---	5-15
Goldenweed	HAPLO2	2-5	---	---	---	---
Phlox	PHLOX	2-5	---	---	---	---
Tapertip hawksbeard	CRAC2	---	---	---	2-5	---
Other perennial forbs	PPFF	---	5-10	---	---	5-10
Low sagebrush	ARAR8	5-15	---	---	---	---
Black sagebrush	ARARN	5-15	---	---	10-20	---
Mountain big sagebrush	ARVA2	1-5	10-20	---	---	---
Utah serviceberry	AMUT	---	5-10	---	---	---
Snowberry	SYMPH	---	5-10	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	5-10
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5
Other shrubs	SSSS	---	---	---	---	5-10

Range site symbol	024X016N	028B029N	None	24X042N	028B024N
Potential production (lb/acre):					
Favorable years	350	1,500	---	1,000	2,800
Normal years	250	900	---	800	1,700
Unfavorable years	150	650	---	500	1,000

## 3342--Halacan-Hapgood-Granzan association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Halacan	Hapgood	Granzan	1	2	3	4
Idaho fescue	FEID	10-20	5-15	---	30-60	---	---	---
Webber ricegrass	STWE	5-10	---	---	---	---	---	---
Bottlebrush squirreltail	SIHY	5-10	---	---	---	---	---	---
Cusick bluegrass	POCU3	2-5	---	---	5-10	---	---	---
Sandberg bluegrass	POSE	2-5	---	---	---	---	---	---
Pine bluegrass	POSC	2-5	---	---	---	---	---	---
Mountain brome	BRCA5	---	10-15	---	---	---	---	---
Slender wheatgrass	AGTR	---	20-30	---	---	---	2-5	---
Bluebunch wheatgrass	AGSP	---	5-10	10-15	2-10	---	---	---
Spike fescue	LEKI2	---	2-15	---	---	---	---	---
Bulbous oniongrass	MEBU	---	2-5	---	---	---	---	---
Nevada bluegrass	PONE3	---	2-5	---	---	---	---	---
Basin wildrye	ELCI2	---	---	5-10	---	---	---	---
Letterman needlegrass	STLE4	---	---	---	---	---	60-70	---
Columbia needlegrass	STNE3	---	---	---	---	---	2-5	---
Other perennial grasses	PPGG	---	---	10-15	---	---	2-5	---
Goldenweed	HAPLO2	2-5	---	---	---	---	---	---
Phlox	PHLOX	2-5	---	---	---	---	---	---
Geranium	GERAN	---	2-5	---	---	---	---	---
Groundsel	SENEC	---	2-5	---	---	---	---	---
Lupine	LUPIN	---	2-5	---	---	---	---	---
Papertip hawksbeard	CRAC2	---	---	---	2-5	---	---	---
Failcup lupine	LUCA	---	---	---	---	---	20-40	---
Other perennial forbs	PPFF	---	---	5-15	---	---	---	---
Low sagebrush	ARAR8	5-15	---	---	---	---	---	---
Black sagebrush	ARARN	5-15	---	---	10-20	---	---	---
Mountain big sagebrush	ARVA2	1-5	5-10	15-25	---	---	---	---
Serviceberry	AMELA	---	5-10	---	---	---	---	---
Snowberry	SYMPH	---	2-10	---	---	---	---	---
Thurber needlegrass	STTH2	---	---	5-10	---	---	---	---
Utah serviceberry	AMUT	---	---	3-10	---	---	---	---
Antelope bitterbrush	PUTR2	---	---	2-8	---	---	---	---
Other shrubs	SSSS	---	---	15-20	---	---	---	---

Range site symbol	024X016N	024X032N	028B027N	024X042N	None	025X028N	None
Potential production (lb/acre):							
Favorable years	350	2,200	900	1,000	---	1,000	---
Normal years	250	1,700	600	800	---	800	---
Unfavorable years	150	1,200	300	500	---	500	---



## 3411--Zoesta-Robson-Softscrabble association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Zoesta	Robson	Softscrabble	1	2	3	4
Bluebunch wheatgrass	AGSP	15-20	15-20	20-30	---	15-30	---	---
Thurber needlegrass	STTH2	15-20	15-20	2-10	---	2-10	---	---
Webber ricegrass	STWE	5-10	5-10	---	---	---	---	5-10
Sandberg bluegrass	POSE	5-8	5-8	---	---	---	---	2-5
Pine bluegrass	POSC	5-8	5-8	---	---	---	---	2-5
Cusick bluegrass	POCU3	5-8	5-8	---	---	---	---	2-5
Idaho fescue	FEID	---	---	20-40	---	25-50	---	10-20
Basin wildrye	ELCI2	---	---	2-15	30-50	---	---	---
Western wheatgrass	AGSM	---	---	---	5-10	---	---	---
Nevada bluegrass	PONE3	---	---	---	5-10	---	---	---
Spike fescue	LEKI2	---	---	---	---	2-10	---	---
Bottlebrush squirreltail	SIHY	---	---	---	---	---	---	5-10
Other perennial grasses	PPGG	---	---	---	5-15	---	---	---
Balsamroot	BALSA	2-5	2-5	---	---	2-5	---	---
Eriogonum	ERIOG	1-3	1-3	---	---	---	---	---
Phlox	Phlox	1-3	1-3	---	---	---	---	2-5
Tapertip hawksbeard	CRAC2	---	---	1-5	---	---	---	---
Arrowleaf balsamroot	BASA3	---	---	1-5	---	---	---	---
Goldenweed	HAPLO2	---	---	---	---	---	---	2-5
Other perennial forbs	PPFF	---	---	---	5-10	---	---	---
Low sagebrush	ARAR8	20-30	20-30	---	---	10-20	---	5-15
Mountain big sagebrush	ARVA2	---	---	5-15	---	---	---	1-5
Basin big sagebrush	ARTRT*	---	---	---	5-10	---	---	---
Rubber rabbitbrush	CHNA2	---	---	---	2-5	---	---	---
Douglas rabbitbrush	CHVI8	---	---	---	---	2-5	---	---
Black sagebrush	ARARN	---	---	---	---	---	---	5-15
Other shrubs	SSSS	---	---	---	5-10	---	---	---

Range site symbol	024X018N	024X018N	024X021N	028B024N	024X027N	None	024X016N
Potential production (lb/acre):							
Favorable years	700	700	1,400	2,800	1,200	---	350
Normal years	500	500	1,000	1,700	800	---	250
Unfavorable years	300	300	700	1,000	600	---	150

## 3415--Zoesta-Handy association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Zoesta	Handy	1	2	3
Bluebunch wheatgrass	AGSP	15-20	20-30	20-30	---	15-20
Thurber needlegrass	STTH2	15-20	15-25	15-25	---	15-20
Webber ricegrass	STWE	5-10	---	---	---	5-10
Sandberg bluegrass	POSE	5-8	---	---	---	5-8
Pine bluegrass	POSC	5-8	---	---	---	5-8
Cusick bluegrass	POCU3	5-8	---	---	---	5-8
Nevada bluegrass	PONE3	---	2-10	2-10	5-15	---
Basin wildrye	ELCI2	---	---	---	50-60	---
Mat muhly	MURI	---	---	---	2-10	---
Sedge	CAREX	---	---	---	1-5	---
Balsamroot	BALSA	2-5	---	---	---	2-5
Other perennial grasses	PPGG	---	10-15	10-15	15-20	---
Eriogonum	ERIOG	1-3	---	---	---	1-3
Phlox	PHOLX	1-3	---	---	---	1-3
Tapertip hawksbeard	CRAC2	---	2-5	2-5	---	---
Arrowleaf balsamroot	BASA3	---	2-5	2-5	---	---
Other perennial forbs	PPFF	---	2-5	2-5	5-10	---
Low sagebrush	ARAR8	20-30	---	---	---	20-30
Big sagebrush	ARTR2	---	10-15	10-15	---	---
Antelope bitterbrush	PUTR2	---	0-10	0-10	---	---
Basin big sagebrush	ARTRT*	---	---	---	10-15	---
Other shrubs	SSSS	---	5-10	5-10	2-5	---

Range site symbol	024X018N	025X014N	025X014N	025X003N	024X018N
Potential production (lb/acre):					
Favorable years	700	1,000	1,000	2,500	700
Normal years	500	800	800	1,900	500
Unfavorable years	300	600	600	1,200	300

## 3417--Zoesta-Roca-Softscrabble association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Zoesta	Roca	Softscrabble	1	2	3
Bluebunch wheatgrass	AGSP	15-20	40-60	20-30	---	20-30	15-20
Thurber needlegrass	STTH2	15-20	5-10	2-10	---	15-25	15-20
Webber ricegrass	STWE	5-10	---	---	---	---	5-10
Sandberg bluegrass	POSE	5-8	---	---	---	---	5-8
Pine bluegrass	POSC	5-8	---	---	---	---	5-8
Cusick bluegrass	POCU3	5-8	---	---	---	---	5-8
Bluegrass	POA++	---	2-10	---	---	---	---
Basin wildrye	ELCI2	---	2-5	2-15	30-50	---	---
Idaho fescue	FEID	---	---	20-40	---	---	---
Western wheatgrass	AGSM	---	---	---	5-10	---	---
Nevada bluegrass	PONE3	---	---	---	5-10	2-10	---
Other perennial grasses	PPGG	---	---	---	5-15	10-15	---
Balsamroot	BALSA	2-5	---	---	---	---	2-5
Eriogonum	ERIOG	1-3	---	---	---	---	1-3
Phlox	PHLOX	1-3	---	---	---	---	1-3
Tapertip hawksbeard	CRAC2	---	2-5	1-5	---	2-5	---
Arrowleaf balsamroot	BASA3	---	2-5	1-5	---	2-5	---
Other perennial forbs	PPFF	---	---	---	5-10	2-5	---
Low sagebrush	ARAR8	20-30	---	---	---	---	20-30
Wyoming big sagebrush	ARTRW*	---	5-10	---	---	---	---
Mountain big sagebrush	ARVA2	---	T-5	5-15	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	5-10	---	---
Rubber rabbitbrush	CHNA2	---	---	---	2-5	---	---
Big sagebrush	ARTR2	---	---	---	---	10-15	---
Antelope bitterbrush	PUTR2	---	---	---	---	0-10	---
Other shrubs	SSSS	---	---	---	5-10	5-10	---

Range site symbol	024X018N	024X028N	024X021N	028B024N	025X014N	024X018N
Potential production (lb/acre):						
Favorable years	700	1,000	1,400	2,800	1,000	700
Normal years	500	700	1,000	1,700	800	500
Unfavorable years	300	500	700	1,000	600	300

## 3421--Belate-Softscrabble-Torro association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Belate	Softscrabble	Torro	1	2	3	4
Idaho fescue	FEID	25-50	20-40	1-10	10-20	---	---	---
Bluebunch wheatgrass	AGSP	15-30	20-30	20-50	---	---	---	---
Thurber needlegrass	STTH2	2-10	2-10	2-5	---	---	---	---
Spike fescue	LEKI2	2-10	---	---	---	---	---	---
Basin wildrye	ELCI2	---	2-15	5-10	---	30-50	---	---
Mountain brome	BRCA5	---	---	2-15	---	---	---	---
Bottlebrush squirreltail	SIHY	---	---	2-5	5-10	---	---	---
Webber ricegrass	STWE	---	---	---	5-10	---	---	---
Cusick bluegrass	POCU3	---	---	---	2-5	---	---	---
Sandberg bluegrass	POSE	---	---	---	2-5	---	---	---
Pine bluegrass	POSC	---	---	---	2-5	---	---	---
Western wheatgrass	AGSM	---	---	---	---	5-10	---	---
Nevada bluegrass	PONE3	---	---	---	---	5-10	---	5-10
Tufted hairgrass	DECA5	---	---	---	---	---	---	30-60
Alpine timothy	PHAL2	---	---	---	---	---	---	5-10
Sedge	CAREX	---	---	---	---	---	---	5-10
Meadow barley	HOBR2	---	---	---	---	---	---	2-5
Other perennial grasses	PPGG	---	---	---	---	5-15	---	2-10
Balsamroot	BALSA	2-5	---	---	---	---	---	---
Tapertip hawksbeard	CRAC2	---	1-5	2-5	---	---	---	---
Arrowleaf balsamroot	BASA3	---	1-5	2-5	---	---	---	---
Goldenweed	HAPLO2	---	---	---	2-5	---	---	---
Phlox	PHLOX	---	---	---	2-5	---	---	---
Sierra clover	TRWO	---	---	---	---	---	---	2-5
Cinquefoil	POTEN	---	---	---	---	---	---	2-5
Other perennial forbs	PPFF	---	---	---	---	5-10	---	10-20
Low sagebrush	ARAR8	10-20	---	---	5-15	---	---	---
Douglas rabbitbrush	CHVI8	2-5	---	---	---	---	---	---
Mountain big sagebrush	ARVA2	---	5-15	5-15	1-5	---	---	---
Black sagebrush	ARARN	---	---	---	5-15	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	5-10	---	---
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5	---	---
Willow	SALIX	---	---	---	---	---	---	2-5
Other shrubs	SSSS	---	---	---	---	5-10	---	2-5

Range site symbol	024X027N	024X021N	024X029N	024X016N	028B024N	None	025X005N
Potential production (lb/acre):							
Favorable years	1,200	1,400	1,500	350	2,800	---	2,000
Normal years	800	1,000	1,100	250	1,700	---	1,700
Unfavorable years	600	700	800	150	1,000	---	1,000

## 3422--Belate-Robson-Torro association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Belate	Robson	Torro	1	2	3	4
Idaho fescue	FEID	25-50	---	1-10	20-40	---	---	---
Bluebunch wheatgrass	AGSP	15-30	15-20	20-50	20-30	---	---	---
Thurber needlegrass	STTH2	2-10	15-20	2-5	2-10	---	---	---
Spike fescue	LEKI2	2-10	---	---	---	---	---	---
Webber ricegrass	STWE	---	5-10	---	---	---	---	---
Sandberg bluegrass	POSE	---	5-8	---	---	---	---	---
Pine bluegrass	POSC	---	5-8	---	---	---	---	---
Cusick bluegrass	POCU3	---	5-8	---	---	---	---	---
Basin wildrye	ELCI2	---	---	5-10	2-15	---	30-50	---
Mountain brome	BRCA5	---	---	2-15	---	---	---	---
Bottlebrush squirreltail	SIHY	---	---	2-5	---	---	---	---
Western wheatgrass	AGSM	---	---	---	---	---	5-10	---
Nevada bluegrass	PONE3	---	---	---	---	---	5-10	5-10
Tufted hairgrass	DECA5	---	---	---	---	---	---	30-60
Alpine timothy	PHAL2	---	---	---	---	---	---	5-10
Sedge	CAREX	---	---	---	---	---	---	5-10
Meadow barley	HOBR2	---	---	---	---	---	---	2-5
Other perennial grasses	PPGG	---	---	---	---	---	5-15	2-10
Balsamroot	BALSA	2-5	2-5	---	---	---	---	---
Eriogonum	ERIOG	---	1-3	---	---	---	---	---
Phlox	PHLOX	---	1-3	---	---	---	---	---
Tapertip hawksbeard	CRAC2	---	---	2-5	1-5	---	---	---
Arrowleaf balsamroot	BASA3	---	---	2-5	1-5	---	---	---
Sierra clover	TRWO	---	---	---	---	---	---	2-5
Cinquefoil	POTEN	---	---	---	---	---	---	2-5
Other perennial forbs	PPFF	---	---	---	---	---	5-10	10-20
Low sagebrush	ARAR8	10-20	20-30	---	---	---	---	---
Douglas rabbitbrush	CHVI8	2-5	---	---	---	---	---	---
Mountain big sagebrush	ARVA2	---	---	5-15	5-15	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	5-10	---
Rubber rabbitbrush	CHNA2	---	---	---	---	---	2-5	---
Willow	SALIX	---	---	---	---	---	---	2-5
Other shrubs	SSSS	---	---	---	---	---	5-10	2-5
Range site symbol		024X027N	024X018N	024X029N	024X021N	None	028B024N	025X005N
Potential production (lb/acre):								
Favorable years		1,200	700	1,500	1,400	---	2,800	2,000
Normal years		800	500	1,100	1,000	---	1,700	1,700
Unfavorable years		600	300	800	700	---	1,000	1,000

## 3423--Belate-Cleavage-Softscrabble association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Belate	Cleavage	Softscrabble	1	2	3	4
Idaho fescue	FEID	25-50	10-20	20-40	1-10	---	---	---
Bluebunch wheatgrass	AGSP	15-30	---	20-30	20-50	---	---	---
Thurber needlegrass	STTH2	2-10	---	2-10	2-5	---	---	---
Spike fescue	LEKI2	2-10	---	---	---	---	---	---
Webber ricegrass	STWE	---	5-10	---	---	---	---	---
Bottlebrush squirreltail	SIHY	---	5-10	---	2-5	---	---	---
Cusick bluegrass	POCU3	---	2-5	---	---	---	---	---
Sandberg bluegrass	POSE	---	2-5	---	---	---	---	---
Pine bluegrass	POSC	---	2-5	---	---	---	---	---
Basin wildrye	ELCI2	---	---	2-15	5-10	---	30-50	---
Mountain brome	BRCA5	---	---	---	2-15	---	---	---
Western wheatgrass	AGSM	---	---	---	---	---	5-10	---
Nevada bluegrass	PONE3	---	---	---	---	---	5-10	5-10
Tufted hairgrass	DECA5	---	---	---	---	---	---	30-60
Alpine timothy	PHAL2	---	---	---	---	---	---	5-10
Sedge	CAREX	---	---	---	---	---	---	5-10
Meadow barley	HOBR2	---	---	---	---	---	---	2-5
Other perennial grasses	PPGG	---	---	---	---	---	5-15	2-10
Balsamroot	BALSA	2-5	---	---	---	---	---	---
Goldenweed	HAPLO2	---	2-5	---	---	---	---	---
Phlox	PHLOX	---	2-5	---	---	---	---	---
Tapertip hawksbeard	CRAC2	---	---	1-5	2-5	---	---	---
Arrowleaf balsamroot	BASA3	---	---	1-5	2-5	---	---	---
Perennial forbs	PPFF	---	---	---	---	---	5-10	---
Sierra clover	TRWO	---	---	---	---	---	---	2-5
Cinquefoil	POTEN	---	---	---	---	---	---	2-5
Other perennial forbs	PPFF	---	---	---	---	---	---	10-20
Low sagebrush	ARAR8	10-20	5-15	---	---	---	---	---
Douglas rabbitbrush	CHVI8	2-5	---	---	---	---	---	---
Black sagebrush	ARARN	---	5-15	---	---	---	---	---
Mountain big sagebrush	ARVA2	---	1-5	5-15	5-15	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	5-10	---
Rubber rabbitbrush	CHNA2	---	---	---	---	---	2-5	---
Willow	SALIX	---	---	---	---	---	---	2-5
Other shrubs	SSSS	---	---	---	---	---	5-10	2-5

Range site symbol	024X027N	024X016N	024X021N	024X029N	None	028B024N	025X005N
Potential production (lb/acre):							
Favorable years	1,200	350	1,400	1,500	---	2,800	2,000
Normal years	800	250	1,000	1,100	---	1,700	1,700
Unfavorable years	600	150	700	800	---	1,000	1,000

## 3450--Reluctan-Robson-Cleavage association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Reluctan	Robson	Cleavage	1	2	3	4
Idaho fescue	FEID	20-40	---	10-20	---	---	---	---
Bluebunch wheatgrass	AGSP	20-30	15-20	---	---	---	---	10-20
Basin wildrye	ELCI2	2-15	---	---	---	---	30-50	---
Thurber needlegrass	STTH2	2-10	15-20	---	---	---	---	5-15
Webber ricegrass	STWE	---	5-10	5-10	---	---	---	---
Sandberg bluegrass	POSE	---	5-8	2-5	---	---	---	---
Pine bluegrass	POSC	---	5-8	2-5	---	---	---	---
Cusick bluegrass	POCU3	---	5-8	2-5	---	---	---	---
Bottlebrush squirreltail	SIHY	---	---	5-10	---	---	---	---
Western wheatgrass	AGSM	---	---	---	---	---	5-10	---
Nevada bluegrass	PONE3	---	---	---	---	---	5-10	---
Indian ricegrass	ORHY	---	---	---	---	---	---	2-10
Bluegrass	POA++	---	---	---	---	---	---	2-10
Other perennial grasses	PPGG	---	---	---	---	---	5-15	---
Tapertip hawksbeard	CRAC2	1-5	---	---	---	---	---	2-5
Arrowleaf balsamroot	BASA3	1-5	---	---	---	---	---	---
Balsamroot	BALSA	---	2-5	---	---	---	---	---
Eriogonum	ERIOG	---	1-3	---	---	---	---	---
Phlox	PHLOX	---	1-3	2-5	---	---	---	---
Goldenweed	HAPLO2	---	---	2-5	---	---	---	---
Other perennial forbs	PPFF	---	---	---	---	---	5-10	5-15
Mountain big sagebrush	ARVA2	5-15	---	1-5	---	---	---	---
Low sagebrush	ARAR8	---	20-30	5-15	---	---	---	---
Black sagebrush	ARARN	---	---	5-15	---	---	---	15-30
Basin big sagebrush	ARTRT*	---	---	---	---	---	5-10	---
Rubber rabbitbrush	CHNA2	---	---	---	---	---	2-5	---
Other shrubs	SSSS	---	---	---	---	---	5-10	---

Range site symbol	O24X021N	O24X018N	O24X016N	None	None	O28B024N	O24X031N
Potential production (lb/acre):							
Favorable years	1,400	700	350	---	---	2,800	700
Normal years	1,000	500	250	---	---	1,700	500
Unfavorable years	700	300	150	---	---	1,000	300

## 3453--Reluctan-Locane-Itca association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Reluctan	Locane	Itca	1	2	3	4
Idaho fescue	FEID	20-40	---	X	20-40	---	---	---
Bluebunch wheatgrass	AGSP	20-30	15-25	X	20-30	15-20	---	---
Basin wildrye	ELCI2	2-15	---	---	2-15	---	30-50	---
Thurber needlegrass	STTH2	2-10	15-25	---	2-10	15-20	---	---
Bluegrass	POA++	---	---	X	---	---	---	---
Webber ricegrass	STWE	---	---	---	---	5-10	---	---
Sandberg bluegrass	POSE	---	---	---	---	5-8	---	---
Pine bluegrass	POSC	---	---	---	---	5-8	---	---
Cusick bluegrass	POCU3	---	---	---	---	5-8	---	---
Western wheatgrass	AGSM	---	---	---	---	---	5-10	---
Nevada bluegrass	PONE3	---	---	---	---	---	5-10	---
Other perennial grasses	PPGG	---	10-20	X	---	---	5-15	---
Tapertip hawksbeard	CRAC2	1-5	2-5	X	1-5	---	---	---
Arrowleaf balsamroot	BASA3	1-5	2-5	X	1-5	---	---	---
Balsamroot	BALSA	---	---	---	---	2-5	---	---
Eriogonum	ERIOG	---	---	---	---	1-3	---	---
Phlox	PHLOX	---	---	---	---	1-3	---	---
Other perennial forbs	PPFF	---	2-10	X	---	---	5-10	---
Mountain big sagebrush	ARVA2	5-15	5-10	---	5-15	---	---	---
Wyoming big sagebrush	ARTRW*	---	5-10	---	---	---	---	---
Big sagebrush	ARTR2	---	---	X	---	---	---	---
Low sagebrush	ARAR8	---	---	---	---	20-30	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	5-10	---
Rubber rabbitbrush	CHNA2	---	---	---	---	---	2-5	---
Other shrubs	SSSS	---	2-10	X	---	---	5-10	---
Singleleaf pinyon	PIMO	---	---	X	---	---	---	---
<hr/>								
Range site symbol		024X021N	024X035N	---	024X021N	024X018N	028B024N	None
Woodland site symbol		---	---	025X061N	---	---	---	---
Potential production (lb/acre):								
Favorable years		1,400	500	500	1,400	700	2,800	---
Normal years		1,000	400	375	1,000	500	1,700	---
Unfavorable years		700	250	250	700	300	1,000	---



## 3455--Reluctan-Roca-Colbar association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Reluctan	Roca	Colbar	1	2	3
Idaho fescue	FEID	20-40	---	---	---	20-40	---
Bluebunch wheatgrass	AGSP	20-30	40-60	5-10	---	20-30	2-10
Basin wildrye	ELCI2	2-15	2-5	---	---	2-15	---
Thurber needlegrass	STTH2	2-10	5-10	20-50	---	2-10	10-20
Bluegrass	POA++	---	2-10	---	---	---	---
Indian ricegrass	ORHY	---	---	---	---	---	5-15
Bottlebrush squirreltail	SIHY	---	---	---	---	---	2-10
Tapertip hawksbeard	CRAC2	1-5	2-5	2-4	---	1-5	---
Arrowleaf balsamroot	BASA3	1-5	2-5	---	---	1-5	---
Balsamroot	BALSA	---	---	2-4	---	---	---
Other perennial forbs	PPFF	---	---	---	---	---	2-8
Mountain big sagebrush	ARVA2	5-15	T-5	---	---	5-15	---
Wyoming big sagebrush	ARTRW*	---	5-10	15-20	---	---	15-25
Downy rabbitbrush	CHVIP	---	---	2-5	---	---	2-5
Spiny hopsage	GRSP	---	---	2-5	---	---	2-10
Ephedra	EPHED	---	---	---	---	---	2-10
Other shrubs	SSSS	---	---	2-10	---	---	---

Range site symbol	024X021N	024X028N	024X005N	None	024X021N	024X047N
Potential production (lb/acre):						
Favorable years	1,400	1,000	800	---	1,400	400
Normal years	1,000	700	600	---	1,000	300
Unfavorable years	700	500	400	---	700	150

## 3457--Reluctan-Clanalpine-Roca association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Reluctan	Clanalpine	Roca	1	2	3
Idaho fescue	FEID	20-40	X	---	---	---	---
Bluebunch wheatgrass	AGSP	20-30	X	40-60	10-20	---	20-30
Basin wildrye	ELCI2	2-15	---	2-5	---	---	---
Thurber needlegrass	STTH2	2-10	---	5-10	5-15	---	15-25
Bluegrass	POA++	---	X	2-10	2-10	---	---
Indian ricegrass	ORHY	---	---	---	2-10	---	---
Nevada bluegrass	PONE3	---	---	---	---	---	2-10
Other perennial grasses	PPGG	---	X	---	---	---	10-15
Tapertip hawksbeard	CRAC2	1-5	X	2-5	2-5	---	2-5
Arrowleaf balsamroot	BASA3	1-5	X	2-5	---	---	2-5
Other perennial forbs	PPFF	---	X	---	5-15	---	2-5
Mountain big sagebrush	ARVA2	5-15	---	T-5	---	---	---
Big sagebrush	ARTR2	---	X	---	---	---	10-15
Wyoming big sagebrush	ARTRW*	---	---	5-10	---	---	---
Black sagebrush	ARARN	---	---	---	15-30	---	---
Antelope bitterbrush	PUTR2	---	---	---	---	---	0-10
Other shrubs	SSSS	---	X	---	---	---	5-10
Singleleaf pinyon	PIMO	---	X	---	---	---	---

Range site symbol	024X021N	---	024X028N	024X031N	None	025X014N
Woodland site symbol	---	025X061N	---	---	None	---
Potential production (lb/acre):						
Favorable years	1,400	500	1,000	700	---	1,000
Normal years	1,000	375	700	500	---	800
Unfavorable years	700	250	500	300	---	600

## 3461--Torro-Rubble land-Cleavage association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Torro	Rubble land	Cleavage	1	2	3
Bluebunch wheatgrass	AGSP	20-50	---	---	20-30	---	5-15
Basin wildrye	ELCI2	5-10	---	---	2-15	---	2-5
Mountain brome	BRCA5	2-15	---	---	---	---	5-10
Thurber needlegrass	STTH2	2-5	---	---	2-10	---	---
Bottlebrush squirreltail	SIHY	2-5	---	5-10	---	---	---
Idaho fescue	FEID	1-10	---	10-20	20-40	---	5-15
Webber ricegrass	STWE	---	---	5-10	---	---	---
Cusick bluegrass	POCU3	---	---	2-5	---	---	2-5
Sandberg bluegrass	POSE	---	---	2-5	---	---	---
Pine bluegrass	POSC	---	---	2-5	---	---	---
Slender wheatgrass	AGTR	---	---	---	---	---	2-5
Letterman needlegrass	STLE4	---	---	---	---	---	2-5
Nevada bluegrass	PONE3	---	---	---	---	---	2-5
Tapertip hawksbeard	CRAC2	2-5	---	---	1-5	---	---
Arrowleaf balsamroot	BASA3	2-5	---	---	1-5	---	---
Goldenweed	HAPLO2	---	---	2-5	---	---	---
Phlox	PHLOX	---	---	2-5	---	---	---
Other perennial forbs	PPFF	---	---	---	---	---	5-15
Mountain big sagebrush	ARVA2	5-15	---	1-5	5-15	---	5-10
Low sagebrush	ARAR8	---	---	5-15	---	---	---
Black sagebrush	ARARN	---	---	5-15	---	---	---
Serviceberry	AMELA	---	---	---	---	---	5-10
Oceanspray	HOLOD	---	---	---	---	---	5-10
Snowberry	SYMPH	---	---	---	---	---	2-10
Threetip sagebrush	ARTR4	---	---	---	---	---	2-10
Currant	RIBES	---	---	---	---	---	2-5

Range site symbol	024X029N	None	024X016N	024X021N	None	024X034N
Potential production (lb/acre):						
Favorable years	1,500	---	350	1,400	---	1,600
Normal years	1,100	---	250	1,000	---	1,300
Unfavorable years	800	---	150	700	---	800

## 3462--Torro-Reluctan-Cleavage association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Torro	Reluctan	Cleavage	1	2	3	4
Bluebunch wheatgrass	AGSP	20-50	20-30	---	---	20-30	20-50	---
Basin wildrye	ELCI2	5-10	2-15	---	---	2-15	5-10	50-60
Mountain brome	BRCA5	2-15	---	---	---	---	2-15	---
Thurber needlegrass	STTH2	2-5	2-10	---	---	2-10	2-5	---
Bottlebrush squirreltail	SIHY	2-5	---	5-10	---	---	2-5	---
Idaho fescue	FEID	1-10	20-40	10-20	---	20-40	1-10	---
Webber ricegrass	STWE	---	---	5-10	---	---	---	---
Cusick bluegrass	POCU3	---	---	2-5	---	---	---	---
Sandberg bluegrass	POSE	---	---	2-5	---	---	---	---
Pine bluegrass	POSC	---	---	2-5	---	---	---	---
Nevada bluegrass	PONE3	---	---	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	---	---	1-5
Other perennial grasses	PPGG	---	---	---	---	---	---	15-20
Tapertip hawksbeard	CRAC2	2-5	1-5	---	---	1-5	2-5	---
Arrowleaf balsamroot	BASA3	2-5	1-5	---	---	1-5	2-5	---
Goldenweed	HAPLO2	---	---	2-5	---	---	---	---
Phlox	PHLOX	---	---	2-5	---	---	---	---
Other perennial forbs	PPFF	---	---	---	---	---	---	5-10
Mountain big sagebrush	ARVA2	5-15	5-15	1-5	---	5-15	5-15	---
Low sagebrush	ARAR8	---	---	5-15	---	---	---	---
Black sagebrush	ARARN	---	---	5-15	---	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	---	10-15
Other shrubs	SSSS	---	---	---	---	---	---	2-5
Range site symbol		024X029N	024X021N	024X016N	None	024X021N	024X029N	025X003N
Potential production (lb/acre):								
Favorable years		1,500	1,400	350	---	1,400	1,500	2,500
Normal years		1,100	1,000	250	---	1,000	1,100	1,900
Unfavorable years		800	700	150	---	700	800	1,200

## 3463--Torro-Clanalpine-Itca association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Torro	Clanalpine	Itca	1	2	3	4
Bluebunch wheatgrass	AGSP	20-50	X	X	---	40-60	---	---
Basin wildrye	ELC12	5-10	---	---	---	2-5	---	---
Mountain brome	BRCA5	2-15	---	---	---	---	---	---
Thurber needlegrass	STTH2	2-5	---	---	---	5-10	---	---
Bottlebrush squirreltail	SIHY	2-5	---	---	5-10	---	---	---
Idaho fescue	FEID	1-10	X	X	---	---	---	---
Bluegrass	POA++	---	X	X	---	2-10	---	---
Indian ricegrass	ORHY	---	---	---	20-30	---	---	---
Needleandthread	STCO4	---	---	---	10-20	---	---	---
Sandberg bluegrass	POSE	---	---	---	2-5	---	---	---
Other perennial grasses	PPGG	---	X	X	---	---	---	---
Tapertip hawkbeard	CRAC2	2-5	X	X	---	2-5	---	---
Arrowleaf balsamroot	BASA3	2-5	X	X	---	2-5	---	---
Other perennial forbs	PPFF	---	X	X	2-5	---	---	---
Mountain big sagebrush	ARVA2	5-15	---	---	---	T-5	---	---
Big sagebrush	ARTR2	---	X	X	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	15-20	5-10	---	---
Other shrubs	SSSS	---	X	X	5-15	---	---	---
Singleleaf pinyon	PIMO	---	X	X	---	---	---	---
Range site symbol		024X029N	---	---	028B010N	024X028N	None	None
Woodland site symbol		---	025X061N	025X061N	---	---	None	None
Potential production (lb/acre):								
Favorable years		1,500	500	500	800	1,000	---	---
Normal years		1,100	375	375	600	700	---	---
Unfavorable years		800	250	250	400	500	---	---

## 3464--Torro-Itca-Softscrabble association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Torro	Itca	Softscrabble	1	2	3	4
Bluebunch wheatgrass	AGSP	20-50	X	20-30	---	15-20	---	---
Basin wildrye	ELCI2	5-10	---	2-15	---	---	30-50	---
Mountain brome	BRCA5	2-15	---	---	---	---	---	---
Thurber needlegrass	STTH2	2-5	---	2-10	---	15-20	---	---
Bottlebrush squirreltail	SIHY	2-5	---	---	---	---	---	---
Idaho fescue	FEID	1-10	X	20-40	---	---	---	---
Bluegrass	POA++	---	X	---	---	---	---	---
Webber ricegrass	STWE	---	---	---	---	5-10	---	---
Sandberg bluegrass	POSE	---	---	---	---	5-8	---	---
Pine bluegrass	POSC	---	---	---	---	5-8	---	---
Cusick bluegrass	POCU3	---	---	---	---	5-8	---	---
Western wheatgrass	AGSM	---	---	---	---	---	5-10	---
Nevada bluegrass	PONE3	---	---	---	---	---	5-10	---
Other perennial grasses	PPGG	---	X	---	---	---	5-15	---
Tapertip hawksbeard	CRAC2	2-5	X	1-5	---	---	---	---
Arrowleaf balsamroot	BASA3	2-5	X	1-5	---	---	---	---
Balsamroot	BALSA	---	---	---	---	2-5	---	---
Eriogonum	ERIOG	---	---	---	---	1-3	---	---
Phlox	PHLOX	---	---	---	---	1-3	---	---
Other perennial forbs	PPFF	---	X	---	---	---	5-10	---
Mountain big sagebrush	ARVA2	5-15	---	5-15	---	---	---	---
Big sagebrush	ARTR2	---	X	---	---	---	---	---
Low sagebrush	ARAR8	---	---	---	---	20-30	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	5-10	---
Rubber rabbitbrush	CHNA2	---	---	---	---	---	2-5	---
Other shrubs	SSSS	---	X	---	---	---	5-10	---
Singleleaf pinyon	PIMO	---	X	---	---	---	---	---

Range site symbol	024X029N	---	024X021N	None	024X018N	028B024N	None
Woodland site symbol	---	025X061N	---	None	---	---	None
Potential production (lb/acre):							
Favorable years	1,500	500	1,400	---	700	2,800	---
Normal years	1,100	375	1,000	---	500	1,700	---
Unfavorable years	800	250	700	---	300	1,000	---

## 3465--Torro-Clanalpine-Softscrabble association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Torro	Clanalpine	Softscrabble	1	2	3
Bluebunch wheatgrass	AGSP	20-50	X	2-5	---	X	5-15
Basin wildrye	ELCI2	5-10	---	---	---	---	---
Mountain brome	BRCA5	2-15	---	---	---	---	---
Thurber needlegrass	STTH2	2-5	---	---	---	---	2-5
Bottlebrush squirreltail	SIHY	2-5	---	---	---	---	2-5
Idaho fescue	FEID	1-10	X	50-65	---	X	---
Bluegrass	POA++	---	X	---	---	X	---
Pine bluegrass	POSC	---	---	10-15	---	---	5-10
Cusick bluegrass	POCU3	---	---	2-5	---	---	---
Indian ricegrass	ORHY	---	---	---	---	---	2-5
Other perennial grasses	PPGG	---	X	5-10	---	X	10-15
Tapertip hawksbeard	CRAC2	2-5	X	---	---	X	---
Arrowleaf balsamroot	BASA3	2-5	X	---	---	X	---
Other perennial forbs	PPFF	---	X	5-10	---	X	10-15
Mountain big sagebrush	ARVA2	5-15	---	5-10	---	---	---
Big sagebrush	ARTR2	---	X	---	---	X	---
Low sagebrush	ARAR8	---	---	---	---	---	25-30
Other shrubs	SSSS	---	X	2-5	---	X	10-20
Singleleaf pinyon	PIMO	---	X	---	---	X	---
Range site symbol		O24X029N	---	O28B049N	None	---	O28B037N
Woodland site symbol		---	O25X061N	---	None	O25X061N	---
Potential production (lb/acre):							
Favorable years		1,500	500	1,200	---	500	700
Normal years		1,100	375	1,000	---	375	500
Unfavorable years		800	250	800	---	250	300

## 3562--Locane-Coztur-Punchbowl association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Locane	Coztur	Punchbowl	1	2	3
Thurber needlegrass	STTH2	20-50	15-25	---	15-25	15-20	---
Bluebunch wheatgrass	AGSP	5-10	20-30	1-3	20-30	15-20	---
Nevada bluegrass	PONE3	---	2-10	---	2-10	---	---
Indian ricegrass	ORHY	---	---	5-15	---	---	---
Needleandthread	STCO4	---	---	5-15	---	---	---
Pine bluegrass	POSC	---	---	2-5	---	5-8	---
Webber ricegrass	STWE	---	---	---	---	5-10	---
Sandberg bluegrass	POSE	---	---	---	---	5-8	---
Cusick bluegrass	POCU3	---	---	---	---	5-8	---
Other perennial grasses	PPGG	---	10-15	5-10	10-15	---	---
Balsamroot	BALSA	2-4	---	---	---	2-5	---
Tapertip hawksbeard	CRAC2	2-4	2-5	---	2-5	---	---
Arrowleaf balsamroot	BASA3	---	2-5	---	2-5	---	---
Eriogonum	ERIOG	---	---	---	---	1-3	---
Phlox	PHLOX	---	---	---	---	1-3	---
Other perennial forbs	PPFF	---	2-5	5-15	2-5	---	---
Wyoming big sagebrush	ARTRW*	15-20	---	---	---	---	---
Downy rabbitbrush	CHVIP	2-5	---	---	---	---	---
Spiny hopsage	GRSP	2-5	---	---	---	---	---
Big sagebrush	ARTR2	---	10-15	---	10-15	---	---
Antelope bitterbrush	PUTR2	---	0-10	---	0-10	---	---
Black sagebrush	ARARN	---	---	20-25	---	---	---
Fourwing saltbush	ATCA2	---	---	2-5	---	---	---
Bud sagebrush	ARSP5	---	---	2-5	---	---	---
Low sagebrush	ARAR8	---	---	---	---	20-30	---
Other shrubs	SSSS	2-10	5-10	10-20	5-10	---	---

Range site symbol	024X005N	025X014N	028B016N	025X014N	024X018N	None
Potential production (lb/acre):						
Favorable years	800	1,000	500	1,000	700	---
Normal years	600	800	250	800	500	---
Unfavorable years	400	600	150	600	300	---



## 3563--Locane-Muni association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Locane	Muni	Locane, eroded	1	2	3
Thurber needlegrass	STTH2	20-50	---	X	---	---	---
Bluebunch wheatgrass	AGSP	5-10	---	X	1-3	---	---
Indian ricegrass	ORHY	---	20-30	---	5-15	2-10	---
Needleandthread	STCO4	---	10-20	---	5-15	---	---
Bottlebrush squirreltail	SIHY	---	5-10	---	---	2-5	---
Sandberg bluegrass	POSE	---	2-5	---	---	2-5	---
Basin wildrye	ELCI2	---	---	X	---	10-20	---
Nevada bluegrass	PONE3	---	---	X	---	---	---
Idaho fescue	FEID	---	---	X	---	---	---
Pine bluegrass	POSC	---	---	---	2-5	---	---
Other perennial grasses	PPGG	---	---	---	5-10	---	---
Balsamroot	BALSA	2-4	---	---	---	---	---
Tapertip hawksbeard	CRAC2	2-4	---	X	---	---	---
Arrowleaf balsamroot	BASA3	---	---	X	---	---	---
Other perennial forbs	PPFF	---	2-5	---	5-15	---	---
Wyoming big sagebrush	ARTRW*	15-20	15-20	---	---	---	---
Downy rabbitbrush	CHVIP	2-5	---	---	---	---	---
Spiny hopsage	GRSP	2-5	---	---	---	15-30	---
Big sagebrush	ARTR2	---	---	X	---	---	---
Snowberry	SYMPH	---	---	X	---	---	---
Currant	RIBES	---	---	X	---	---	---
Black sagebrush	ARARN	---	---	---	20-25	---	---
Fourwing saltbush	ATCA2	---	---	---	2-5	---	---
Bud sagebrush	ARSP5	---	---	---	2-5	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	15-25	---
Black greasewood	SAVE4	---	---	---	---	2-10	---
Anderson peachbrush	PRAN2	---	---	---	---	2-10	---
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5	---
Other shrubs	SSSS	2-10	5-15	---	10-20	---	---
Singleleaf pinyon	PIMO	---	---	X	---	---	---
Utah juniper	JUOS	---	---	X	---	---	---

Range site symbol	024X005N	028B010N	---	028B016N	024X041N	None
Woodland site symbol	---	---	025X062N	---	---	None
Potential production (lb/acre):						
Favorable years	800	800	500	500	1,000	---
Normal years	600	600	350	250	800	---
Unfavorable years	400	400	200	150	600	---

## 3625--Minat-Coztur-Belate association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Minat	Coztur	Belate	1	2	3
Thurber needlegrass	STTH2	20-50	15-25	2-10	15-25	---	---
Bluebunch wheatgrass	AGSP	5-10	20-30	15-30	20-30	---	---
Nevada bluegrass	PONE3	---	2-10	---	2-10	---	5-10
Idaho fescue	FEID	---	---	25-50	---	---	---
Spike fescue	LEKI2	---	---	2-10	---	---	---
Basin wildrye	ELCI2	---	---	---	---	---	30-50
Western wheatgrass	AGSM	---	---	---	---	---	5-10
Other perennial grasses	PPGG	---	10-15	---	10-15	---	5-15
Balsamroot	BALSA	2-4	---	2-5	---	---	---
Tapertip hawksbeard	CRAC2	2-4	2-5	---	2-5	---	---
Arrowleaf balsamroot	BASA3	---	2-5	---	2-5	---	---
Other perennial forbs	PPFF	---	2-5	---	2-5	---	5-10
Wyoming big sagebrush	ARTRW*	15-20	---	---	---	---	---
Downy rabbitbrush	CHVIP	2-5	---	---	---	---	---
Spiny hopsage	GRSP	2-5	---	---	---	---	---
Big sagebrush	ARTR2	---	10-15	---	10-15	---	---
Antelope bitterbrush	PUTR2	---	0-10	---	0-10	---	---
Low sagebrush	ARAR8	---	---	10-20	---	---	---
Douglas rabbitbrush	CHVI8	---	---	2-5	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	5-10
Rubber rabbitbrush	CHNA2	---	---	---	---	---	2-5
Other shrubs	SSSS	2-10	5-10	---	5-10	---	5-10

Range site symbol	O24X005N	O25X014N	O24X027N	O25X014N	None	O28B024N
Potential production (lb/acre):						
Favorable years	800	1,000	1,200	1,000	---	2,800
Normal years	600	800	800	800	---	1,700
Unfavorable years	400	600	600	600	---	1,000

## 3690--Izod-Koynik-Rock outcrop association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Izod	Koynik	Rock outcrop	1	2
Indian ricegrass	ORHY	10-15	2-5	---	---	5-15
Thurber needlegrass	STTH2	10-15	---	---	20-50	---
Bluegrass	POA++	2-10	---	---	---	---
Bottlebrush squirreltail	SIHY	---	2-10	---	---	---
Desert needlegrass	STSP3	---	2-10	---	---	---
Sandberg bluegrass	POSE	---	1-3	---	---	---
Bluebunch wheatgrass	AGSP	---	---	---	5-10	1-3
Needleandthread	STCO4	---	---	---	---	5-15
Pine bluegrass	POSC	---	---	---	---	2-5
Other perennial grasses	PPGG	5-20	---	---	---	5-10
Globemallow	SPHAE	2-5	---	---	---	---
Balsamroot	BALSA	---	---	---	2-4	---
Tapertip hawksbeard	CRAC2	---	---	---	2-4	---
Other perennial forbs	PPFF	---	2-8	---	---	5-15
Black sagebrush	ARARN	25-35	---	---	---	20-25
Shadscale	ATCO	---	30-50	---	---	---
Bud sagebrush	ARSP5	---	15-30	---	---	2-5
Wyoming big sagebrush	ARTRW*	---	---	---	15-20	---
Downy rabbitbrush	CHVIP	---	---	---	2-5	---
Spiny hopsage	GRSP	---	---	---	2-5	---
Fourwing saltbush	ATCA2	---	---	---	---	2-5
Other shrubs	SSSS	5-35	---	---	2-10	10-20

Range site symbol	024X030N	024X025N	None	024X005N	028B016N
Potential production (lb/acre):					
Favorable years	500	250	---	800	500
Normal years	350	150	---	600	250
Unfavorable years	250	75	---	400	150

## 3740--Kelk silt loam, saline

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Kelk	1	2	3
Basin wildrye	ELCI2	5-20	50-60	---	20-40
Bottlebrush squirreltail	SIHY	2-5	---	5-15	---
Indian ricegrass	ORHY	2-5	---	5-15	---
Western wheatgrass	AGSM	---	5-15	---	---
Sandberg bluegrass	POSE	---	---	2-5	---
Needleandthread	STCO4	---	---	1-3	---
Thelypody	THELY	2-4	---	---	---
Other perennial forbs	PPFF	---	2-8	2-8	2-8
Black greasewood	SAVE4	20-30	2-10	---	5-15
Basin big sagebrush	ARTRT*	5-15	15-20	---	2-10
Wyoming big sagebrush	ARTRW*	5-10	---	---	---
Spiny hopsage	GRSP	5-15	---	2-5	---
Rubber rabbitbrush	CHNA2	---	2-5	---	---
Shadscale	ATCO	---	---	30-40	---
Bud sagebrush	ARSP5	---	---	20-30	---
Winterfat	EULA5	---	---	2-5	---
Torrey quailbush	ATTO	---	---	---	30-50
Other shrubs	SSSS	---	---	2-5	---

Range site symbol	024X022N	024X006N	024X002N	024X015N
Potential production (lb/acre):				
Favorable years	800	1,500	700	1,500
Normal years	600	1,100	450	1,200
Unfavorable years	350	600	300	800

## 3741--Kelk-Settlemyer association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Kelk	Settlemyer	1	2	3
Basin wildrye	ELCI2	50-60	30-50	20-40	---	---
Western wheatgrass	AGSM	5-15	2-5	---	---	---
Nevada bluegrass	PONE3	---	2-5	---	---	---
Bottlebrush squirreltail	SIHY	---	---	---	5-10	---
Slender hairgrass	DEEL	---	---	---	---	10-20
Streambank wheatgrass	AGRI	---	---	---	---	2-5
Thickspike wheatgrass	AGDA	---	---	---	---	2-5
Rush	JUNCU	---	---	---	---	5-10
Sedge	CAREX	---	---	---	---	5-10
Other perennial grasses	PPGG	---	15-25	---	T-10	---
Perennial forbs	PPFF	2-8	2-5	2-8	2-8	5-10
Basin big sagebrush	ARTRT*	15-20	5-10	2-10	---	---
Black greasewood	SAVE4	2-10	---	5-15	15-30	---
Rubber rabbitbrush	CHNA2	2-5	---	---	---	---
Torrey quailbush	ATTO	---	---	30-50	---	---
Shadscale	ATCO	---	---	---	30-50	---
Bud sagebrush	ARSP5	---	---	---	5-15	---
Seepweed	SUAED	---	---	---	2-15	---
Woods rose	ROWO	---	---	---	---	5-10
Currant	RIBES	---	---	---	---	5-10
Common chokecherry	PRVI	---	---	---	---	2-5
Skunkbush sumac	RHTR	---	---	---	---	2-5
Utah serviceberry	AMUT	---	---	---	---	2-5
Other shrubs	SSSS	---	5-10	---	---	5-10

Range site symbol	024X006N	028B003N	024X015N	024X003N	028B033N
Potential production (lb/acre):					
Favorable years	1,500	2,600	1,500	600	1,600
Normal years	1,100	1,250	1,200	450	1,200
Unfavorable years	600	800	800	300	800

## 3742--Kelk-Ocala association

[The letter "T" means trace. Absence of an entry means that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Kelk	Ocala	1	2	3
Basin wildrye	ELCI2	50-60	40-60	---	5-15	30-50
Western wheatgrass	AGSM	5-15	---	---	---	2-5
Alkali sacaton	SPAI	---	15-30	---	---	---
Inland saltgrass	DISPS2	---	5-10	---	5-10	---
Bottlebrush squirreltail	SIHY	---	---	5-10	---	---
Nevada bluegrass	PONE3	---	---	---	---	2-5
Other perennial grasses	PPGG	---	---	T-10	---	15-25
Perennial forbs	PPFF	2-8	---	2-8	T-5	2-5
Basin big sagebrush	ARTRT*	15-20	---	---	---	5-10
Black greasewood	SAVE4	2-10	5-15	15-30	60-75	---
Rubber rabbitbrush	CHNA2	2-5	1-2	---	---	---
Alkali rabbitbrush	CHAL9	---	1-2	---	---	---
Shadscale	ATCO	---	---	30-50	---	---
Bud sagebrush	ARSP5	---	---	5-15	---	---
Seepweed	SUAED	---	---	2-15	---	---
Other shrubs	SSSS	---	---	---	---	5-10

Range site symbol	024X006N	024X007N	024X003N	024X011N	028B003N
Potential production (lb/acre):					
Favorable years	1,500	1,900	600	500	2,600
Normal years	1,100	1,400	450	350	1,250
Unfavorable years	600	800	300	200	800

## 3840--Jung-Newpass association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Jung, moderately steep	Newpass	Jung, strongly sloping	1	2	3
Bluegrass	POA++	10-40	---	10-40	---	---	---
Thurber needlegrass	STTH2	2-10	---	2-10	---	---	---
Pine bluegrass	POSC	---	5-15	---	---	5-15	---
Indian ricegrass	ORHY	---	5-15	---	5-15	5-15	---
Bottlebrush squirreltail	SIHY	---	5-10	---	5-15	5-10	---
Sandberg bluegrass	POSE	---	---	---	2-5	---	---
Needleandthread	STCO4	---	---	---	1-3	---	---
Other perennial grasses	PPGG	5-10	5-10	5-10	---	5-10	---
Perennial forbs	PPFF	5-10	5-10	5-10	2-8	5-10	---
Black sagebrush	ARARN	20-30	---	20-30	---	---	---
Shadscale	ATCO	5-10	---	5-10	30-40	---	---
Wyoming big sagebrush	ARTRW*	---	10-20	---	---	10-20	---
Spiny hopsage	GRSP	---	10-20	---	2-5	10-20	---
Nevada ephedra	EPNE	---	5-10	---	---	5-10	---
Bud sagebrush	ARSP5	---	---	---	20-30	---	---
Winterfat	EULA5	---	---	---	2-5	---	---
Other shrubs	SSSS	5-10	---	5-10	2-5	---	---

Range site symbol	027X032N	027X008N	027X032N	024X002N	027X008N	None
Potential production (lb/acre):						
Favorable years	600	700	600	700	700	---
Normal years	400	500	400	450	500	---
Unfavorable years	200	300	200	300	300	---

## 3841--Jung-Itca-Roca association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Jung	Itca	Roca	1	2	3
Indian ricegrass	ORHY	5-15	---	---	---	---	---
Needleandthread	STCO4	5-15	---	---	---	---	---
Pine bluegrass	POSC	2-5	---	---	---	20-30	---
Bluebunch wheatgrass	AGSP	---	X	40-60	20-30	---	---
Bluegrass	POA++	---	X	2-10	---	---	---
Idaho fescue	FEID	---	X	---	---	---	---
Thurber needlegrass	STTH2	---	---	5-10	15-25	5-10	---
Basin wildrye	ELCI2	---	---	2-5	---	---	---
Nevada bluegrass	PONE3	---	---	---	2-10	---	---
Other perennial grasses	PPGG	---	X	---	10-15	5-15	---
Tapertip hawksbeard	CRAC2	---	X	2-5	2-5	---	---
Arrowleaf balsamroot	BASA3	---	X	2-5	2-5	---	---
Other perennial forbs	PPFF	5-15	X	---	2-5	5-10	---
Black sagebrush	ARARN	20-25	---	---	---	---	---
Fourwing saltbush	ATCA2	2-5	---	---	---	---	---
Bud sagebrush	ARSP5	2-5	---	---	---	---	---
Big sagebrush	ARTR2	---	X	---	10-15	---	---
Wyoming big sagebrush	ARTRW*	---	---	5-10	---	10-20	---
Mountain big sagebrush	ARVA2	---	---	T-5	---	---	---
Antelope bitterbrush	PUTR2	---	---	---	0-10	---	---
Spiny hopsage	GRSP	---	---	---	---	5-15	---
Nevada ephedra	EPNE	---	---	---	---	5-10	---
Other shrubs	SSSS	10-20	X	---	5-10	5-10	---
Singleleaf pinyon	PIMO	---	X	---	---	---	---

Range site symbol	028B016N	---	024X028N	025X014N	027X007N	None
Woodland site symbol	---	025X061N	---	---	---	None
Potential production (lb/acre):						
Favorable years	500	500	1,000	1,000	600	---
Normal years	250	375	700	800	450	---
Unfavorable years	150	250	500	600	300	---



## 3842--Jung-Hooplite association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Jung	Hooplite	1	2	3
Indian ricegrass	ORHY	5-15	5-15	5-15	---	5-15
Needleandthread	STCO4	5-15	5-15	1-3	---	1-3
Pine bluegrass	POSC	2-5	2-5	---	---	---
Bluebunch wheatgrass	AGSP	1-3	1-3	---	---	---
Bottlebrush squirreltail	SIHY	---	---	5-15	---	5-15
Sandberg bluegrass	POSE	---	---	2-5	---	2-5
Other perennial grasses	PPGG	5-10	5-10	---	---	---
Perennial forbs	PPFF	5-15	5-15	2-8	---	2-8
Black sagebrush	ARARN	20-25	20-25	---	---	---
Fourwing saltbush	ATCA2	2-5	2-5	---	---	---
Bud sagebrush	ARSP5	2-5	2-5	20-30	---	20-30
Shadscale	ATCO	---	---	30-40	---	30-40
Spiny hopsage	GRSP	---	---	2-5	---	2-5
Winterfat	EULA5	---	---	2-5	---	2-5
Other shrubs	SSSS	10-20	10-20	2-5	---	2-5
Range site symbol		028B016N	028B016N	024X002N	None	024X002N
Potential production (lb/acre):						
Favorable years		500	500	700	---	700
Normal years		250	250	450	---	450
Unfavorable years		150	150	300	---	300

## 3843--Jung-Newpass-Teguro association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Jung	Newpass	Teguro	1	2	3
Bluegrass	POA++	10-40	---	---	X	---	X
Thurber needlegrass	STTH2	2-10	---	X	---	---	---
Pine bluegrass	POSC	---	5-15	---	---	---	---
Indian ricegrass	ORHY	---	5-15	---	---	---	---
Bottlebrush squirreltail	SIHY	---	5-10	---	---	---	---
Bluebunch wheatgrass	AGSP	---	---	X	X	---	X
Basin wildrye	ELCI2	---	---	X	---	---	---
Nevada bluegrass	PONE3	---	---	X	---	---	---
Idaho fescue	FEID	---	---	X	X	---	X
Other perennial grasses	PPGG	5-10	5-10	---	X	---	X
Tapertip hawksbeard	CRAC2	---	---	X	X	---	X
Arrowleaf balsamroot	BASA3	---	---	X	X	---	X
Other perennial forbs	PPFF	5-10	5-10	---	X	---	X
Black sagebrush	ARARN	20-30	---	---	---	---	---
Shadscale	ATCO	5-10	---	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	10-20	---	---	---	---
Spiny hopsage	GRSP	---	10-20	---	---	---	---
Nevada ephedra	EPNE	---	5-10	---	---	---	---
Big sagebrush	ARTR2	---	---	X	X	---	X
Snowberry	SYMPH	---	---	X	---	---	---
Currant	RIBES	---	---	X	---	---	---
Other shrubs	SSSS	5-10	---	---	X	---	X
Singleleaf pinyon	PIMO	---	---	X	X	---	X
Utah juniper	JUOS	---	---	X	---	---	---

Range site symbol	027X032N	027X008N	---	---	None	---
Woodland site symbol	---	---	025X062N	025X061N	None	025X061N
Potential production (lb/acre):						
Favorable years	600	700	500	500	---	500
Normal years	400	500	350	375	---	375
Unfavorable years	200	300	200	250	---	250

## 3845--Jung-Stingdorn-Atlow association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Jung	Stingdorn	Atlow	1	2	3	4
Indian ricegrass	ORHY	5-15	5-15	10-15	---	5-15	---	---
Needleandthread	STCO4	5-15	1-3	---	---	1-3	---	---
Pine bluegrass	POSC	2-5	---	---	---	---	---	---
Bluebunch wheatgrass	AGSP	1-3	---	---	5-10	---	---	---
Bottlebrush squirreltail	SIHY	---	5-15	---	---	5-15	---	---
Sandberg bluegrass	POSE	---	2-5	---	---	2-5	---	---
Thurber needlegrass	STTH2	---	---	10-15	20-50	---	---	---
Bluegrass	POA++	---	---	2-10	---	---	---	---
Other perennial grasses	PPGG	5-10	---	5-20	---	---	---	---
Globemallow	SPHAE	---	---	2-5	---	---	---	---
Balsamroot	BALSA	---	---	---	2-4	---	---	---
Tapertip hawksbeard	CRAC2	---	---	---	2-4	---	---	---
Other perennial forbs	PPFF	5-15	2-8	---	---	2-8	---	---
Black sagebrush	ARARN	20-25	---	25-35	---	---	---	---
Fourwing saltbush	ATCA2	2-5	---	---	---	---	---	---
Bud sagebrush	ARSP5	2-5	20-30	---	---	20-30	---	---
Shadscale	ATCO	---	30-40	---	---	30-40	---	---
Spiny hopsage	GRSP	---	2-5	---	2-5	2-5	---	---
Winterfat	EULA5	---	2-5	---	---	2-5	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	15-20	---	---	---
Downy rabbitbrush	CHVIP	---	---	---	2-5	---	---	---
Other shrubs	SSSS	10-20	2-5	5-35	2-10	2-5	---	---

Range site symbol	028B016N	024X002N	024X030N	024X005N	024X002N	None	None
Potential production (lb/acre):							
Favorable years	500	700	500	800	700	---	---
Normal years	250	450	350	600	450	---	---
Unfavorable years	150	300	250	400	300	---	---

## 3846---Jung-Atlow-McVegas association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Jung	Atlow	McVegas	1	2	3
Indian ricegrass	ORHY	5-15	10-15	5-15	---	---	---
Needleandthread	STCO4	5-15	---	5-10	---	---	---
Pine bluegrass	POSC	2-5	---	---	---	---	---
Bluebunch wheatgrass	AGSP	1-3	---	---	---	5-10	---
Thurber needlegrass	STTH2	---	10-15	---	---	20-50	2-10
Bluegrass	POA++	---	2-10	---	---	---	10-40
Bottlebrush squirreltail	SIHY	---	---	2-5	---	---	---
Other perennial grasses	PPGG	5-10	5-20	5-10	---	---	5-10
Globemallow	SPHAE	---	2-5	---	---	---	---
Balsamroot	BALSA	---	---	---	---	2-4	---
Tapertip hawksbeard	CRAC2	---	---	---	---	2-4	---
Other perennial forbs	PPFF	5-15	---	5-10	---	---	5-10
Black sagebrush	ARARN	20-25	25-35	---	---	---	20-30
Fourwing saltbush	ATCA2	2-5	---	2-5	---	---	---
Bud sagebrush	ARSP5	2-5	---	5-10	---	---	---
Shadscale	ATCO	---	---	30-40	---	---	5-10
Winterfat	EULA5	---	---	2-5	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	15-20	---
Downy rabbitbrush	CHVIP	---	---	---	---	2-5	---
Spiny hopsage	GRSP	---	---	---	---	2-5	---
Other shrubs	SSSS	10-20	5-35	5-15	---	2-10	5-10

Range site symbol	028B016N	024X030N	028B017N	None	024X005N	027X032N
Potential production (lb/acre):						
Favorable years	500	500	700	---	800	600
Normal years	250	350	500	---	600	400
Unfavorable years	150	250	250	---	400	200

## 3847--Jung-Old Camp-Clanalpine association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Jung	Old Camp	Clanalpine	1	2	3
Bluegrass	POA++	10-40	---	X	---	---	10-30
Thurber needlegrass	STTH2	2-10	5-10	---	---	---	---
Pine bluegrass	POSC	---	20-30	---	---	5-15	---
Idaho fescue	FEID	---	---	X	---	---	---
Bluebunch wheatgrass	AGSP	---	---	X	---	---	---
Bottlebrush squirreltail	SIHY	---	---	---	---	5-10	---
Other perennial grasses	PPGG	5-10	5-15	X	---	5-15	5-15
Tapertip hawksbeard	CRAC2	---	---	X	---	---	---
Arrowleaf balsamroot	BASA3	---	---	X	---	---	---
Other perennial forbs	PPFF	5-10	5-10	X	---	5-10	2-5
Black sagebrush	ARARN	20-30	---	---	---	---	---
Shadscale	ATCO	5-10	---	---	---	---	20-30
Wyoming big sagebrush	ARTRW*	---	10-20	---	---	10-20	---
Spiny hopsage	GRSP	---	5-15	---	---	---	---
Nevada ephedra	EPNE	---	5-10	---	---	10-15	---
Big sagebrush	ARTR2	---	---	X	---	---	---
Bud sagebrush	ARSP5	---	---	---	---	---	10-20
Other shrubs	SSSS	5-10	5-10	X	---	5-15	5-10
Singleleaf pinyon	PIMO	---	---	X	---	---	---
Range site symbol		O27X032N	O27X007N	---	None	O27X011N	O27X028N
Woodland site symbol		---	---	O25X061N		---	---
Potential production (lb/acre):							
Favorable years		600	600	500	---	600	700
Normal years		400	450	375	---	400	500
Unfavorable years		200	300	250	---	200	300

## 3848--Jung-McVegas-Enko association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Jung	McVegas	Enko	1	2	3	4
Indian ricegrass	ORHY	10-15	5-15	20-30	5-15	10-15	20-30	---
Thurber needlegrass	STTH2	10-15	---	---	---	10-15	---	---
Bluegrass	POA++	2-10	---	---	---	2-10	---	---
Bottlebrush squirreltail	SIHY	---	5-15	5-10	5-15	---	5-10	---
Sandberg bluegrass	POSE	---	2-5	2-5	2-5	---	2-5	---
Needleandthread	STCO4	---	1-3	10-20	1-3	---	10-20	---
Other perennial grasses	PPGG	5-20	---	---	---	5-20	---	---
Globemallow	SPHAE	2-5	---	---	---	2-5	---	---
Other perennial forbs	PPFF	---	2-8	2-5	2-8	---	2-5	---
Black sagebrush	ARARN	25-35	---	---	---	25-35	---	---
Shadscale	ATCO	---	30-40	---	30-40	---	---	---
Bud sagebrush	ARSP5	---	20-30	---	20-30	---	---	---
Spiny hopsage	GRSP	---	2-5	---	2-5	---	---	---
Winterfat	EULA5	---	2-5	---	2-5	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	15-20	---	---	15-20	---
Other shrubs	SSSS	5-35	2-5	5-15	2-5	5-35	5-15	---

Range site symbol	024X030N	024X002N	028B010N	024X002N	024X030N	028B010N	None
Potential production (lb/acre):							
Favorable years	500	700	800	700	500	800	---
Normal years	350	450	600	450	350	600	---
Unfavorable years	250	300	400	300	250	400	---

## 3851--Decram-Hapgood association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Decram moderately steep	Decram, steep	Hapgood	1	2	3	4
Idaho fescue	FEID	10-20	25-50	5-15	1-10	---	---	---
Webber ricegrass	STWE	5-10	---	---	---	---	---	---
Bottlebrush squirreltail	SIHY	5-10	---	---	2-5	---	---	---
Cusick bluegrass	POCU3	2-5	---	---	---	---	---	---
Sandberg bluegrass	POSE	2-5	---	---	---	---	---	---
Pine bluegrass	POSC	2-5	---	---	---	---	---	---
Bluebunch wheatgrass	AGSP	---	15-30	5-10	20-50	---	---	40-60
Thurber needlegrass	STTH2	---	2-10	---	2-5	---	---	5-10
Spike fescue	LEKI2	---	2-10	2-15	---	---	---	---
Mountain brome	BRCA5	---	---	10-15	2-15	---	---	---
Slender wheatgrass	AGTR	---	---	20-30	---	---	---	---
Bulbous oniongrass	MEBU	---	---	2-5	---	---	---	---
Nevada bluegrass	PONE3	---	---	2-5	---	---	---	---
Basin wildrye	ELCI2	---	---	---	5-10	---	---	2-5
Bluegrass	POA++	---	---	---	---	---	---	2-10
Goldenweed	HAPLO2	2-5	---	---	---	---	---	---
Phlox	PHLOX	2-5	---	---	---	---	---	---
Balsamroot	BALSA	---	2-5	---	---	---	---	---
Geranium	GERAN	---	---	2-5	---	---	---	---
Groundsel	SENEC	---	---	2-5	---	---	---	---
Lupine	LUPIN	---	---	2-5	---	---	---	---
Tapertip hawksbeard	CRAC2	---	---	---	2-5	---	---	2-5
Arrowleaf balsamroot	BASA3	---	---	---	2-5	---	---	2-5
Low sagebrush	ARAR8	5-15	10-20	---	---	---	---	---
Black sagebrush	ARARN	5-15	---	---	---	---	---	---
Mountain big sagebrush	ARVA2	1-5	---	5-10	5-15	---	---	T-5
Douglas rabbitbrush	CHVI8	---	2-5	---	---	---	---	---
Serviceberry	AMELA	---	---	5-10	---	---	---	---
Snowberry	SYMPH	---	---	2-10	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	---	---	5-10
Range site symbol		024X016N	024X027N	024X032N	024X029N	None	None	024X028N
Potential production (lb/acre):								
Favorable years		350	1,200	2,200	1,500	---	---	1,000
Normal years		250	800	1,700	1,100	---	---	700
Unfavorable years		150	600	1,200	800	---	---	500

## 3852--Decram-Hapgood-Chad association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Decram	Hapgood	Chad	1	2	3	4
Idaho fescue	FEID	10-15	10-15	---	5-10	---	---	---
Bluebunch wheatgrass	AGSP	5-10	---	10-15	---	---	---	---
Pine bluegrass	POSC	5-10	---	---	---	---	---	---
Mountain brome	BRCA5	---	15-20	---	2-5	---	---	---
Letterman needlegrass	STLE4	---	5-10	---	---	---	---	---
Spike fescue	LEKI2	---	5-10	---	---	---	---	---
Basin wildrye	ELCI2	---	---	5-10	---	---	30-50	---
Western wheatgrass	AGSM	---	---	---	---	---	5-10	---
Nevada bluegrass	PONE3	---	---	---	---	---	5-10	5-10
Tufted hairgrass	DECA5	---	---	---	---	---	---	30-60
Alpine timothy	PHAL2	---	---	---	---	---	---	5-10
Sedge	CAREX	---	---	---	---	---	---	5-10
Meadow barley	HOBR2	---	---	---	---	---	---	2-5
Thurber needlegrass	STTH2	---	---	5-10	---	---	---	---
Other perennial grasses	PPGG	10-15	5-15	10-15	5-15	---	5-15	2-10
Sierra clover	TRWO	---	---	---	---	---	---	2-5
Cinquefoil	POTEN	---	---	---	---	---	---	2-5
Other perennial forbs	PPFF	5-10	5-10	5-15	5-15	---	5-10	10-20
Low sagebrush	ARAR8	5-15	---	---	---	---	---	---
Black sagebrush	ARARN	5-15	---	---	---	---	---	---
Mountain big sagebrush	ARVA2	---	10-20	15-25	---	---	---	---
Utah serviceberry	AMUT	---	5-10	3-10	2-5	---	---	---
Snowberry	SYMPH	---	5-10	---	5-10	---	---	---
Antelope bitterbrush	PUTR2	---	---	2-8	---	---	---	---
Common chokecherry	PRVI	---	---	---	20-30	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	5-10	---
Rubber rabbitbrush	CHNA2	---	---	---	---	---	2-5	---
Willow	SALIX	---	---	---	---	---	---	2-5
Other shrubs	SSSS	5-10	---	15-20	5-15	---	5-10	2-5

Range site symbol	028B038N	028B029N	028B027N	028B026N	None	028B024N	025X005N
Potential production (lb/acre):							
Favorable years	800	1,500	900	1,400	---	2,800	2,000
Normal years	600	900	600	1,000	---	1,700	1,700
Unfavorable years	400	650	300	700	---	1,000	1,000



## 3861--Duco-Itca-Roca association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Duco	Itca	Roca	1	2	3
Idaho fescue	FEID	X	X	---	---	---	---
Bluebunch wheatgrass	AGSP	X	X	40-60	---	10-20	---
Bluegrass	POA++	---	X	2-10	---	---	---
Thurber needlegrass	STTH2	X	---	5-10	---	5-10	---
Basin wildrye	ELCI2	X	---	2-5	---	2-5	30-50
Pine bluegrass	POSC	---	---	---	---	2-5	---
Western wheatgrass	AGSM	---	---	---	---	---	5-10
Nevada bluegrass	PONE3	X	---	---	---	---	5-10
Other perennial grasses	PPGG	---	X	---	---	10-20	5-15
Tapertip hawksbeard	CRAC2	X	X	2-5	---	---	---
Arrowleaf balsamroot	BASA3	X	X	2-5	---	---	---
Other perennial forbs	PPFF	---	X	---	---	5-12	5-10
Big sagebrush	ARTR2	X	X	---	---	---	---
Snowberry	SYMPH	X	---	---	---	---	---
Currant	RIBES	X	---	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	5-10	---	---	---
Mountain big sagebrush	ARVA2	---	---	T-5	---	15-25	---
Antelope bitterbrush	PUTR2	---	---	---	---	5-10	---
Utah serviceberry	AMUT	---	---	---	---	2-10	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	5-10
Rubber rabbitbrush	CHNA2	---	---	---	---	---	2-5
Other shrubs	SSSS	---	X	---	---	5-15	5-10
Singleleaf pinyon	PIMO	X	X	---	---	---	---
Utah juniper	JUOS	X	---	---	---	---	---
Range site symbol	---	---	---	024X028N	None	028B030N	028B024N
Woodland site symbol	---	025X062N	025X061N	---	None	---	---
Potential production (lb/acre):							
Favorable years		500	500	1,000	---	1,100	2,800
Normal years		350	375	700	---	850	1,700
Unfavorable years		200	250	500	---	550	1,000

## 3863--Duco-Clanalpine-Jung association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Duco	Clanalpine	Jung	1	2	3
Bluebunch wheatgrass	AGSP	X	X	---	---	---	---
Basin wildrye	ELCI2	X	---	---	---	---	---
Thurber needlegrass	STTH2	X	---	2-10	---	---	5-10
Nevada bluegrass	PONE3	X	---	---	---	---	---
Idaho fescue	FEID	X	X	---	---	---	---
Bluegrass	POA++	---	X	10-40	---	---	---
Pine bluegrass	POSC	---	---	---	---	5-15	20-30
Indian ricegrass	ORHY	---	---	---	---	5-15	---
Bottlebrush squirreltail	SIHY	---	---	---	---	5-10	---
Other perennial grasses	PPGG	---	X	5-10	---	5-10	5-15
Tapertip hawksbeard	CRAC2	X	X	---	---	---	---
Arrowleaf balsamroot	BASA3	X	X	---	---	---	---
Other perennial forbs	PPFF	---	X	5-10	---	5-10	5-10
Big sagebrush	ARTR2	X	X	---	---	---	---
Snowberry	SYMPH	X	---	---	---	---	---
Currant	RIBES	X	---	---	---	---	---
Black sagebrush	ARARN	---	---	20-30	---	---	---
Shadscale	ATCO	---	---	5-10	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	10-20	10-20
Spiny hopsage	GRSP	---	---	---	---	10-20	5-15
Nevada ephedra	EPNE	---	---	---	---	5-10	5-10
Other shrubs	SSSS	---	X	5-10	---	---	5-10
Singleleaf pinyon	PIMO	X	X	---	---	---	---
Utah juniper	JUOS	X	---	---	---	---	---

Range site symbol	---	---	027X032N	None	027X008N	027X007N
Woodland site symbol	025X062N	025X061N	---	None	---	---
Potential production (lb/acre):						
Favorable years	500	500	600	---	700	600
Normal years	350	375	400	---	500	450
Unfavorable years	200	250	200	---	300	300

## 3881--Layview-Packer-Hapgood association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Layview	Packer	Hapgood	1	2	3	4
Idaho fescue	FEID	10-20	---	5-15	10-20	30-60	---	---
Webber ricegrass	STWE	5-10	---	---	5-10	---	---	---
Bottlebrush squirreltail	SIHY	5-10	2-5	---	5-10	---	---	---
Cusick bluegrass	POCU3	2-5	---	---	2-5	5-10	---	---
Sandberg bluegrass	POSE	2-5	---	---	2-5	---	---	---
Pine bluegrass	POSC	2-5	5-10	---	2-5	---	---	---
Bluebunch wheatgrass	AGSP	---	5-15	5-10	---	2-10	---	---
Thurber needlegrass	STTH2	---	2-5	---	---	---	---	---
Indian ricegrass	ORHY	---	2-5	---	---	---	---	---
Mountain brome	BRCA5	---	---	10-15	---	---	---	---
Slender wheatgrass	AGTR	---	---	20-30	---	---	---	---
Spike fescue	LEKI2	---	---	2-15	---	---	---	---
Bulbous oniongrass	MEBU	---	---	2-5	---	---	---	---
Nevada bluegrass	PONE3	---	---	2-5	---	---	---	---
Other perennial grasses	PPGG	---	10-15	---	---	---	---	---
Goldenweed	HAPLO2	2-5	---	---	2-5	---	---	---
Phlox	PHLOX	2-5	---	---	2-5	---	---	---
Geranium	GERAN	---	---	2-5	---	---	---	---
Groundsel	SENEC	---	---	2-5	---	---	---	---
Lupine	LUPIN	---	---	2-5	---	---	---	---
Tapertip hawksbeard	CRAC2	---	---	---	---	2-5	---	---
Other perennial forbs	PPFF	---	10-15	---	---	---	---	---
Low sagebrush	ARAR8	5-15	25-30	---	5-15	---	---	---
Black sagebrush	ARARN	5-15	---	---	5-15	10-20	---	---
Mountain big sagebrush	ARVA2	1-5	---	5-10	1-5	---	---	---
Serviceberry	AMELA	---	---	5-10	---	---	---	---
Snowberry	SYMPH	---	---	2-10	---	---	---	---
Other shrubs	SSSS	---	10-20	---	---	---	---	---

Range site symbol	024X016N	028B037N	024X032N	024X016N	024X042N	None	None
Potential production (lb/acre):							
Favorable years	350	700	2,200	350	1,000	---	---
Normal years	250	500	1,700	250	800	---	---
Unfavorable years	150	300	1,200	150	500	---	---

## 3891--Labshaft-Hapgood-Rock outcrop association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Labshaft	Hapgood	Rock outcrop	1	2	3
Idaho fescue	FEID	5-15	5-15	---	10-20	5-15	---
Bluebunch wheatgrass	AGSP	5-10	5-10	---	---	5-10	---
Columbia needlegrass	STCO3	5-10	---	---	---	---	---
Western needlegrass	STOC2	5-10	---	---	---	---	---
Mountain brome	BRCA5	---	10-15	---	---	10-15	---
Slender wheatgrass	AGTR	---	20-30	---	---	20-30	---
Spike fescue	LEKI2	---	2-15	---	---	2-15	---
Bulbous oniongrass	MEBU	---	2-5	---	---	2-5	---
Nevada bluegrass	PONE3	---	2-5	---	---	2-5	---
Webber ricegrass	STWE	---	---	---	5-10	---	---
Bottlebrush squirreltail	SIHY	---	---	---	5-10	---	---
Cusick bluegrass	POCU3	---	---	---	2-5	---	---
Sandberg bluegrass	POSE	---	---	---	2-5	---	---
Pine bluegrass	POSC	---	---	---	2-5	---	---
Other perennial grasses	PPGG	5-10	---	---	---	---	---
Geranium	GERAN	---	2-5	---	---	2-5	---
Groundsel	SENEC	---	2-5	---	---	2-5	---
Lupine	LUPIN	---	2-5	---	---	2-5	---
Goldenweed	HAPLO2	---	---	---	2-5	---	---
Phlox	PHLOX	---	---	---	2-5	---	---
Other perennial forbs	PPFF	10-15	---	---	---	---	---
Mountain big sagebrush	ARVA2	5-10	5-10	---	1-5	5-10	---
Snowberry	SYMPH	1-5	2-10	---	---	2-10	---
Curleaf mountainmahogany	CELE3	5-10	---	---	---	---	---
Serviceberry	AMELA	---	5-10	---	---	5-10	---
Low sagebrush	ARAR8	---	---	---	5-15	---	---
Black sagebrush	ARARN	---	---	---	5-15	---	---
Other shrubs	SSSS	5-10	---	---	---	---	---

Range site symbol	028B043N	024X032N	None	024X016N	024X032N	None
Potential production (lb/acre):						
Favorable years	1,000	2,200	---	350	2,200	---
Normal years	800	1,700	---	250	1,700	---
Unfavorable years	600	1,200	---	150	1,200	---

## 3950--Hooplite-Jung-Izod association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Hooplite	Jung	Izod	1	2	3	4
Indian ricegrass	ORHY	10-15	10-15	10-15	X	---	10-30	---
Thurber needlegrass	STTH2	10-15	10-15	10-15	X	20-50	---	---
Bluegrass	POA++	2-10	2-10	2-10	X	---	---	---
Bluebunch wheatgrass	AGSP	---	---	---	X	5-10	---	---
Bottlebrush squirreltail	SIHY	---	---	---	---	---	5-10	---
Other perennial grasses	PPGG	5-20	5-20	5-20	X	---	10-20	---
Globemallow	SPHAE	2-5	2-5	2-5	---	---	---	---
Tapertip hawksbeard	CRAC2	---	---	---	X	2-4	---	---
Arrowleaf balsamroot	BASA3	---	---	---	X	---	---	---
Balsamroot	BALSA	---	---	---	---	2-4	---	---
Other perennial forbs	PPFF	---	---	---	X	---	5-15	---
Black sagebrush	ARARN	25-35	25-35	25-35	X	---	5-15	---
Downy rabbitbrush	CHVIP	---	---	---	X	2-5	1-5	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	15-20	10-25	---
Spiny hopsage	GRSP	---	---	---	---	2-5	1-5	---
Antelope bitterbrush	PUTR2	---	---	---	---	---	1-5	---
Purple sage	SADOC2	---	---	---	---	---	T-5	---
Other shrubs	SSSS	5-35	5-35	5-35	X	2-10	2-4	---
Utah juniper	JUOS	---	---	---	X	---	---	---
Singleleaf pinyon	PIMO	---	---	---	X	---	---	---
Range site symbol		024X030N	024X030N	024X030N	---	024X005N	025X025N	None
Woodland site symbol		---	---	---	025X063N	---	---	None
Potential production (lb/acre):								
Favorable years		500	500	500	400	800	200	---
Normal years		350	350	350	275	600	150	---
Unfavorable years		250	250	250	150	400	100	---

## 3951--Hooplite-Old Camp-Puett association

[The letter "t" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Hooplite	Old Camp	Puett	1	2	3
Bluegrass	POA++	10-40	---	---	10-40	---	---
Thurber needlegrass	STTH2	2-10	20-50	---	2-10	---	---
Bluebunch wheatgrass	AGSP	---	5-10	---	---	---	---
Indian ricegrass	ORHY	---	---	10-30	---	5-15	10-30
Bottlebrush squirreltail	SIHY	---	---	5-10	---	5-10	5-10
Pine bluegrass	POSC	---	---	---	---	5-15	---
Other perennial grasses	PPGG	5-10	---	10-20	5-10	5-10	10-20
Balsamroot	BALSA	---	2-4	---	---	---	---
Tapertip hawksbeard	CRAC2	---	2-4	---	---	---	---
Other perennial forbs	PPFF	5-10	---	5-15	5-10	5-10	5-15
Black sagebrush	ARARN	20-30	---	5-15	20-30	---	5-15
Shadscale	ATCO	5-10	---	---	5-10	---	---
Wyoming big sagebrush	ARTRW*	---	15-20	10-25	---	10-20	10-25
Downy rabbitbrush	CHVIP	---	2-5	1-5	---	---	1-5
Spiny hopsage	GRSP	---	2-5	1-5	---	10-20	1-5
Antelope bitterbrush	PUTR2	---	---	1-5	---	---	1-5
Purple sage	SADOC2	---	---	T-5	---	---	T-5
Nevada ephedra	EPNE	---	---	---	---	5-10	---
Other shrubs	SSSS	5-10	2-10	2-4	5-10	---	2-4
<hr/>							
Range site symbol		027X032N	024X005N	025X025N	027X032N	027X008N	025X025N
Potential production (lb/acre):							
Favorable years		600	800	200	600	700	200
Normal years		400	600	150	400	500	150
Unfavorable years		200	400	100	200	300	100

## 3952--Hooplite-Stingdorn association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name		Inclusion number--			
		Hooplite	Stingdorn	1	2	3	4
Indian ricegrass	ORHY	5-15	5-15	5-15	---	15-25	---
Needleandthread	STCO4	5-15	1-3	1-3	---	5-10	---
Pine bluegrass	POSC	2-5	---	---	---	---	---
Bluebunch wheatgrass	AGSP	1-3	---	---	---	2-5	---
Bottlebrush squirreltail	SIHY	---	5-15	5-15	---	---	---
Sandberg bluegrass	POSE	---	2-5	2-5	---	---	---
Basin wildrye	ELCI2	---	---	---	---	2-5	---
Other perennial grasses	PPGG	5-10	---	---	---	---	---
Perennial forbs	PPFF	5-15	2-8	2-8	---	5-10	---
Black sagebrush	ARARN	20-25	---	---	---	20-30	---
Fourwing saltbush	ATCA2	2-5	---	---	---	---	---
Bud sagebrush	ARSP5	2-5	20-30	20-30	---	2-5	---
Shadscale	ATCO	---	30-40	30-40	---	---	---
Spiny hopsage	GRSP	---	2-5	2-5	---	---	---
Winterfat	EULA5	---	2-5	2-5	---	5-10	---
Small rabbitbrush	CHVIS	---	---	---	---	2-5	---
Other shrubs	SSSS	10-20	2-5	2-5	---	---	---

Range site symbol	O28B016N	O24X002N	O24X002N	None	O28B011N	None
Potential production (lb/acre):						
Favorable years	500	700	700	---	950	---
Normal years	250	450	450	---	700	---
Unfavorable years	150	300	300	---	400	---

## 3960--Pineval gravelly loam, 2 to 4 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Pineval	1	2	3
Indian ricegrass	ORHY	20-30	2-5	5-15	2-5
Needleandthread	STCO4	10-20	---	1-3	---
Bottlebrush squirreltail	SIHY	5-10	2-5	5-15	2-5
Sandberg bluegrass	POSE	2-5	---	2-5	---
Basin wildrye	ELCI2	---	5-20	---	5-20
Thelypody	THELY	---	2-4	---	2-4
Other perennial forbs	PPFF	2-5	---	2-8	---
Wyoming big sagebrush	ARTRW*	15-20	5-10	---	5-10
Black greasewood	SAVE4	---	20-30	---	20-30
Basin big sagebrush	ARTRT*	---	5-15	---	5-15
Spiny hopsage	GRSP	---	5-15	2-5	5-15
Shadscale	ATCO	---	---	30-40	---
Bud sagebrush	ARSP5	---	---	20-30	---
Winterfat	EULA5	---	---	2-5	---
Other shrubs	SSSS	5-15	---	2-5	---

Range site symbol	028B01CN	024X022N	024X002N	024X022N
Potential production (lb/acre):				
Favorable years	800	800	700	800
Normal years	600	600	450	600
Unfavorable years	400	350	300	350



## 3961--Pineval-Orovada-Beoska association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Pineval	Orovada	Beoska	1	2	3
Indian ricegrass	ORHY	20-30	---	5-15	2-10	---	---
Needleandthread	STCO4	10-20	---	1-3	---	---	---
Bottlebrush squirreltail	SIHY	5-10	---	5-15	2-10	---	---
Sandberg bluegrass	POSE	2-5	---	2-5	2-5	---	---
Thurber needlegrass	STTH2	---	20-50	---	2-5	20-50	---
Bluebunch wheatgrass	AGSP	---	5-10	---	---	5-10	---
Webber ricegrass	STWE	---	---	---	2-10	---	---
Desert needlegrass	STSP3	---	---	---	2-5	---	---
Pine bluegrass	POSC	---	---	---	2-5	---	---
Basin wildrye	ELCI2	---	---	---	---	---	50-60
Nevada bluegrass	PONE3	---	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	---	1-5
Other perennial grasses	PPGG	---	---	---	---	---	15-20
Balsamroot	BALSA	---	2-4	---	---	2-4	---
Tapertip hawksbeard	CRAC2	---	2-4	---	---	2-4	---
Eriogonum	ERIOG	---	---	---	1-2	---	---
Hawksbeard	CREPI	---	---	---	1-2	---	---
Other perennial forbs	PPFF	2-5	---	2-8	---	---	5-10
Wyoming big sagebrush	ARTRW*	15-20	15-20	---	10-25	15-20	---
Downy rabbitbrush	CHVIP	---	2-5	---	2-5	2-5	---
Spiny hopsage	GRSP	---	2-5	2-5	5-15	2-5	---
Shadscale	ATCO	---	---	30-40	10-25	---	---
Bud sagebrush	ARSP5	---	---	20-30	2-5	---	---
Winterfat	EULA5	---	---	2-5	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	10-15
Other shrubs	SSSS	5-15	2-10	2-5	---	2-10	2-5

Range site symbol	028B010N	024X005N	024X002N	024X026N	024X005N	025X003N
Potential production (lb/acre):						
Favorable years	800	800	700	400	800	2,500
Normal years	600	600	450	300	600	1,900
Unfavorable years	400	400	300	200	400	1,200

## 3964--Pineval-Orovada association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Pineval	Orovada	1	2	3
Indian ricegrass	ORHY	20-30	20-30	20-30	20-30	---
Needleandthread	STCO4	10-20	10-20	10-20	10-20	---
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	5-10	---
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	---
Basin wildrye	ELCI2	---	---	---	---	30-50
Nevada bluegrass	PONE3	---	---	---	---	2-5
Western wheatgrass	AGSM	---	---	---	---	2-5
Other perennial grasses	PPGG	---	---	---	---	15-25
Perennial forbs	PPFF	2-5	2-5	2-5	2-5	2-5
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	15-20	---
Basin big sagebrush	ARTRT*	---	---	---	---	5-10
Other shrubs	SSSS	5-15	5-15	5-15	5-15	5-10
<hr/>						
Range site symbol		028B010N	028B010N	028B010N	028B010N	028B003N
Potential production (lb/acre):						
Favorable years		800	800	800	800	2,600
Normal years		600	600	600	600	1,250
Unfavorable years		400	400	400	400	800

## 3990--Settlemyer fine sandy loam, drained, 0 to 2 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Settlemyer	1	2	3
Basin wildrye	ELC12	30-50	50-60	---	---
Nevada bluegrass	PONE3	2-5	---	---	5-10
Western wheatgrass	AGSM	2-5	5-15	---	---
Thurber needlegrass	STTH2	---	---	20-50	---
Bluebunch wheatgrass	AGSP	---	---	5-10	---
Wildrye	ELYMU	---	---	---	30-60
Inland saltgrass	DISPS2	---	---	---	5-10
Mat muhly	MURI	---	---	---	2-10
Other perennial grasses	PPGG	15-25	---	---	5-15
Balsamroot	BALSA	---	---	2-4	---
Tapertip hawksbeard	CRAC2	---	---	2-4	---
Sierra clover	TRWO	---	---	---	2-5
Other perennial forbs	PPFF	2-5	2-8	---	5-10
Basin big sagebrush	ARTRT*	5-10	15-20	---	2-5
Black greasewood	SAVE4	---	2-10	---	---
Rubber rabbitbrush	CHNA2	---	2-5	---	---
Wyoming big sagebrush	ARTRW*	---	---	15-20	---
Downy rabbitbrush	CHVIP	---	---	2-5	---
Spiny hopsage	GRSP	---	---	2-5	---
Willow	SALIX	---	---	---	5-10
Silver sagebrush	ARCA13	---	---	---	2-5
Other shrubs	SSSS	5-10	---	2-10	2-8
<hr/>					
Range site symbol		028B003N	024X006N	024X005N	025X001N
Potential production (lb/acre):					
Favorable years		2,600	1,500	800	3,000
Normal years		1,250	1,100	600	2,500
Unfavorable years		800	600	400	1,800

## 3991--Settlemyer-Pineval association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Settlemyer	Pineval	1	2	3
Basin wildrye	ELCI2	30-50	---	5-20	---	5-15
Nevada bluegrass	PONE3	2-5	---	---	---	---
Western wheatgrass	AGSM	2-5	---	---	---	---
Indian ricegrass	ORHY	---	20-30	2-5	15-25	---
Needleandthread	STCO4	---	10-20	---	---	---
Bottlebrush squirreltail	SIHY	---	5-10	2-5	2-5	---
Sandberg bluegrass	POSE	---	2-5	---	---	---
Thurber needlegrass	STTH2	---	---	---	5-10	---
Alkali sacaton	SPAI	---	---	---	---	20-30
Inland saltgrass	DISPS2	---	---	---	---	5-10
Other perennial grasses	PPGG	15-25	---	---	---	10-20
Thelypody	THELY	---	---	2-4	---	---
Scarlet globemallow	SPCO	---	---	---	2-5	---
Other perennial forbs	PPFF	2-5	2-5	---	---	5-10
Basin big sagebrush	ARTRT*	5-10	---	5-15	---	2-5
Wyoming big sagebrush	ARTRW*	---	15-20	5-10	15-25	---
Black greasewood	SAVE4	---	---	20-30	---	5-10
Spiny hopsage	GRSP	---	---	5-15	20-30	---
Bud sagebrush	ARSP5	---	---	---	5-10	---
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5
Fourwing saltbush	ATCA2	---	---	---	---	2-5
Other shrubs	SSSS	5-10	5-15	---	5-10	2-5

Range site symbol	028B003N	028B010N	024X022N	028B052N	028B004N
Potential production (lb/acre):					
Favorable years	2,600	800	800	600	2,000
Normal years	1,250	600	600	400	1,000
Unfavorable years	800	400	350	300	500

## 3992--Settlemyer complex

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Settlemyer, drained	Settlemyer, frequently flooded	1	2
Basin wildrye	ELCI2	50-60	---	---	50-60
Nevada bluegrass	PONE3	5-15	5-10	---	---
Mat muhly	MURI	2-10	2-10	---	---
Sedge	CAREX	1-5	---	---	---
Wildrye	ELYMU	---	30-60	---	---
Inland saltgrass	DISPS2	---	5-10	---	---
Thurber needlegrass	STTH2	---	---	20-50	---
Bluebunch wheatgrass	AGSP	---	---	5-10	---
Western wheatgrass	AGSM	---	---	---	5-15
Other perennial grasses	PPGG	15-20	5-15	---	---
Sierra clover	TRWO	---	2-5	---	---
Balsamroot	BALSA	---	---	2-4	---
Tapertip hawksbeard	CRAC2	---	---	2-4	---
Other perennial forbs	PPFF	5-10	5-10	---	2-8
Basin big sagebrush	ARTRT*	10-15	2-5	---	15-20
Willow	SALIX	---	5-10	---	---
Silver sagebrush	ARCA13	---	2-5	---	---
Wyoming big sagebrush	ARTRW*	---	---	15-20	---
Downy rabbitbrush	CHVIP	---	---	2-5	---
Spiny hopsage	GRSP	---	---	2-5	---
Black greasewood	SAVE4	---	---	---	2-10
Rubber rabbitbrush	CHNA2	---	---	---	2-5
Other shrubs	SSSS	2-5	2-8	2-10	---

Range site symbol	025X003N	025X001N	024X005N	024X006N
Potential production (lb/acre):				
Favorable years	2,500	3,000	800	1,500
Normal years	1,900	2,500	600	1,100
Unfavorable years	1,200	1,800	400	600

## 4041--Hymas-Xine-Attella association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Hymas	Xine	Attella	1	2	3	4
Bluebunch wheatgrass	AGSP	X	20-30	X	20-50	10-20	---	---
Basin wildrye	ELCI2	X	2-15	X	5-10	---	---	30-50
Thurber needlegrass	STTH2	X	2-10	X	2-5	5-15	---	---
Nevada bluegrass	PONE3	X	---	X	---	---	---	5-10
Idaho fescue	FEID	X	20-40	X	1-10	---	---	---
Mountain brome	BRCA5	---	---	---	2-15	---	---	---
Bottlebrush squirreltail	SIHY	---	---	---	2-5	---	---	---
Indian ricegrass	ORHY	---	---	---	---	2-10	---	---
Bluegrass	POA++	---	---	---	---	2-10	---	---
Western wheatgrass	AGSM	---	---	---	---	---	---	5-10
Other perennial grasses	PPGG	---	---	---	---	---	---	5-15
Tapertip hawksbeard	CRAC2	X	1-5	X	2-5	2-5	---	---
Arrowleaf balsamroot	BASA3	X	1-5	X	2-5	---	---	---
Other perennial forbs	PPFF	---	---	---	---	5-15	---	5-10
Big sagebrush	ARTR2	X	---	X	---	---	---	---
Snowberry	SYMPH	X	---	X	---	---	---	---
Currant	RIBES	X	---	X	---	---	---	---
Mountain big sagebrush	ARVA2	---	5-15	---	5-15	---	---	---
Black sagebrush	ARARN	---	---	---	---	15-30	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	---	5-10
Rubber rabbitbrush	CHNA2	---	---	---	---	---	---	2-5
Other shrubs	SSSS	---	---	---	---	---	---	5-10
Singleleaf pinyon	PIMO	X	---	X	---	---	---	---
Utah juniper	JUOS	X	---	X	---	---	---	---

Range site symbol	---	024X021N	---	024X029N	024X031N	None	028B024N
Woodland site symbol	025X062N	---	025X062N	---	---	None	---
Potential production (lb/acre):							
Favorable years	500	1,400	500	1,500	700	---	2,800
Normal years	350	1,000	350	1,100	500	---	1,700
Unfavorable years	200	700	200	800	300	---	1,000

## 4070--Genaw-Wieland-Grina association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Genaw	Wieland	Grina	1	2	3
Thurber needlegrass	STTH2	20-50	20-50	X	---	5-10	---
Bluebunch wheatgrass	AGSP	5-10	5-10	X	---	---	---
Indian ricegrass	ORHY	---	---	X	---	15-30	---
Bluegrass	POA++	---	---	X	---	---	---
Basin wildrye	ELCI2	---	---	X	50-60	---	50-60
Nevada bluegrass	PONE3	---	---	---	5-15	---	---
Mat muhly	MURI	---	---	---	2-10	---	---
Sedge	CAREX	---	---	---	1-5	---	---
Other perennial grasses	PPGG	---	---	---	15-20	5-15	---
Western wheatgrass	AGSM	---	---	---	---	---	5-15
Balsamroot	BALSA	2-4	2-4	---	---	---	---
Tapertip hawksbeard	CRAC2	2-4	2-4	X	---	---	---
Arrowleaf balsamroot	BASA3	---	---	X	---	---	---
Globemallow	SPHAE	---	---	---	---	2-4	---
Other perennial forbs	PPFF	---	---	---	5-10	---	2-8
Wyoming big sagebrush	ARTRW*	15-20	15-20	---	---	15-30	---
Downy rabbitbrush	CHVIP	2-5	2-5	---	---	---	---
Spiny hopsage	GRSP	2-5	2-5	---	---	2-5	---
Big sagebrush	ARTR2	---	---	X	---	---	---
Douglas rabbitbrush	CHVI8	---	---	X	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	10-15	---	15-20
Shadscale	ATCO	---	---	---	---	2-5	---
Black greasewood	SAVE4	---	---	---	---	---	2-10
Rubber rabbitbrush	CHNA2	---	---	---	---	---	2-5
Other shrubs	SSSS	2-10	2-10	---	2-5	2-5	---
Utah juniper	JUOS	---	---	X	---	---	---
Range site symbol		024X005N	024X005N	---	025X003N	024X045N	024X006N
Woodland site symbol		---	---	025X059N	---	---	---
Potential production (lb/acre):							
Favorable years		800	800	500	2,500	350	1,500
Normal years		600	600	350	1,900	200	1,100
Unfavorable years		400	400	200	1,200	100	600

## 4072--Genaw-Orovada-Puett association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Genaw	Orovada	Puett	1	2	3
Indian ricegrass	ORHY	20-30	20-30	10-30	15-30	10-15	10-20
Needleandthread	STCO4	10-20	10-20	---	---	---	20-30
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	---	---	2-5
Sandberg bluegrass	POSE	2-5	2-5	---	---	---	---
Thurber needlegrass	STTH2	---	---	---	5-10	10-15	---
Bluegrass	POA++	---	---	---	---	2-10	---
Thickspike wheatgrass	AGDA	---	---	---	---	---	2-10
Other perennial grasses	PPGG	---	---	10-20	5-15	5-20	2-5
Globemallow	SPHAE	---	---	---	2-4	2-5	---
Other perennial forbs	PPFF	2-5	2-5	5-15	---	---	10-20
Wyoming big sagebrush	ARTRW*	15-20	15-20	10-25	15-30	---	---
Downy rabbitbrush	CHVIP	---	---	1-5	---	---	---
Spiny hopsage	GRSP	---	---	1-5	2-5	---	T-5
Antelope bitterbrush	PUTR2	---	---	1-5	---	---	---
Black sagebrush	ARARN	---	---	5-15	---	25-35	---
Purple sage	SADOC2	---	---	T-5	---	---	---
Shadscale	ATCO	---	---	---	2-5	---	---
Big sagebrush	ARTR2	---	---	---	---	---	10-20
Other shrubs	SSSS	5-15	5-15	2-4	2-5	5-35	2-10
<hr/>							
Range site symbol		028B010N	028B010N	025X025N	024X045N	024X030N	024X017N
Potential production (lb/acre):							
Favorable years		800	800	200	350	500	900
Normal years		600	600	150	200	350	700
Unfavorable years		400	400	100	100	250	500



## 4073--Genaw-Broyles-Perlor association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Genaw	Broyles	Perlor	1	2	3
Thurber needlegrass	STTH2	10-20	---	---	10-20	5-10	---
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	15-30	---
Bottlebrush squirreltail	SIHY	2-10	5-15	5-15	2-10	---	5-10
Sandberg bluegrass	POSE	2-10	2-5	2-5	2-10	---	---
Needleandthread	STCO4	---	1-3	1-3	---	---	---
Other perennial grasses	PPGG	---	---	---	---	5-15	T-10
Tapertip hawksbeard	CRAC2	1-2	---	---	1-2	---	---
Globemallow	SPHAE	1-2	---	---	1-2	2-4	---
Phlox	PHLOX	1-2	---	---	1-2	---	---
Other perennial forbs	PPFF	---	2-8	2-8	---	---	2-8
Wyoming big sagebrush	ARTRW*	30-35	---	---	30-35	15-30	---
Spiny hopsage	GRSP	5-15	2-5	2-5	5-15	2-5	---
Shadscale	ATCO	---	30-40	30-40	---	2-5	30-50
Bud sagebrush	ARSP5	---	20-30	20-30	---	---	5-15
Winterfat	EULA5	---	2-5	2-5	---	---	---
Black greasewood	SAVE4	---	---	---	---	---	15-30
Seepweed	SUAED	---	---	---	---	---	2-15
Other shrubs	SSSS	---	2-5	2-5	---	2-5	---

Range site symbol	O24X020N	O24X002N	O24X002N	O24X020N	O24X045N	O24X003N
Potential production (lb/acre):						
Favorable years	700	700	700	700	350	600
Normal years	450	450	450	450	200	450
Unfavorable years	300	300	300	300	100	300

## 4140--Welch loam, drained, 2 to 8 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Welch	1	2
Basin wildrye	ELCI2	50-60	5-10	---
Nevada bluegrass	PONE3	5-15	---	5-10
Mat muhly	MURI	2-10	---	---
Sedge	CAREX	1-5	---	5-10
Slender wheatgrass	AGTR	---	1-10	---
Nodding brome	BRAN	---	1-10	---
Slender hairgrass	DEEL	---	2-5	---
Tufted hairgrass	DECA5	---	---	30-60
Alpine timothy	PHAL2	---	---	5-10
Meadow barley	HOBR2	---	---	2-5
Other perennial grasses	PPGG	15-20	5-10	2-10
Sierra clover	TRWO	---	---	2-5
Cinquefoil	POTEN	---	---	2-5
Other perennial forbs	PPFF	5-10	10-20	10-20
Basin big sagebrush	ARTRT*	10-15	---	---
Woods rose	ROWO	---	5-10	---
Common chokecherry	PRVI	---	5-10	---
Snowberry	SYMPH	---	2-5	---
Willow	SALIX	---	---	2-5
Other shrubs	SSSS	2-5	5-10	2-5

Range site symbol	025X003N	028B025N	025X005N
Potential production (lb/acre):			
Favorable years	2,500	1,700	2,000
Normal years	1,900	1,300	1,700
Unfavorable years	1,200	900	1,000

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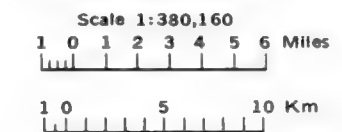
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19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

Inset, sheet 13

Inset, sheet 14

# INDEX TO MAP SHEETS LANDER COUNTY, NEVADA SOUTH PART



SOIL LEGEND

SYMBOL	NAME
120	Akerue-Simpark-Robson association
121	Akerue-Simpark-Punchbowl association
141	Unsel-Wardenot-Belled association
142	Unsel-Caphor-Chedeshap association
150	Chedehap-Enko-Ricert association
160	Batan association
161	Batan silt loam*
162	Batan-Kelk association
168	Batan-Bubus Ocala association
169	Batan-Ocala association
170	Beoska-Orovada association
171	Beoska silt loam, 2 to 8 percent slopes*
172	Beoska-Tenabo complex*
173	Beoska-Allor association
174	Beoska-Chiara association
175	Beoska Whirlo-Misad association
177	Beoska-Dewar-Orovada association
180	Needle Peak-Batan-Yobe association
190	Wardenot-Sundown association
191	Wardenot-Laxal association
200	Izo Misad association
201	Izo-Bubus association
210	Laxal association
211	Laxal gravelly fine sandy loam, occasionally flooded, 0 to 2 percent slopes*
212	Laxal-Tomel association
220	Blackhawk very fine sandy loam, 2 to 8 percent slopes*
221	Blackhawk-Tenabo-Desatoya Variant association
231	Broyles very fine sandy loam, 2 to 4 percent slopes*
235	Broyles-Creemon association
236	Broyles association
237	Broyles-Beoska-Orovada association
239	Broyles-Tessfive-Perfor association
249	Bubus association
260	Umlerland-Wendane association
261	Umlerland-Wendane-Ocala association
262	Umlerland silt loam, frequently flooded, 0 to 2 percent slopes*
270	Tomel-Laxal association
280	Chiara-Filiran association
284	Chiara-Dewar association
290	Creemon silt loam, 0 to 2 percent slopes*
291	Creemon-Wholan association
295	Creemon-Cren association
296	Creemon-Hessing association
297	Creemon-Rasille-Tulase association
298	Creemon-Misad association
301	Cren-Ocala-Playas association
310	Yobe-Kawich-Playas association
320	Newpass-Jung association
321	Newpass-Old Camp association
360	Eastwell Blackhawk-Pineval association
404	Glean-Gando association
441	Gund-Umlerland association
442	Gund-Bubus-Wendane association
443	Gund-Batan association
444	Gund association
461	Hapgood-Packer-Layview association
463	Hapgood-Packer-Rubble land association
465	Hapgood-Halacan-Hatur association
491	Enko-Orovada association, gently sloping
492	Enko-Glyphs association
493	Enko-Orovada association, nearly level
512	Hessing-Relley association
560	Jesse Camp silt loam
621	Loncan-Gando-Glean association
632	McConnet-Orovada Misad association
633	McConnet-Rasille-Wholan association
635	McConnet-Rasille association
636	McConnet-Defler-Rasille association
637	McConnet-Orovada association
638	McConnet-Wholan association
670	Filiran-Pineval-Kingingham association
674	Filiran-Buttaran association

SYMBOL	NAME
675	Filiran-Buttaran-Orovada association
680	Skullwak-Umlerland-Wendane association
683	Ocala-Sonoma-Faranat association
700	Orovada-Rasille-Wholan association
701	Orovada fine sandy loam, 2 to 4 percent slopes*
702	Orovada-Creemon association
703	Orovada fine sandy loam, 0 to 2 percent slopes*
704	Orovada-McConnel association
705	Orovada-Valmy association
740	Playas
751	Poorcal-Lopwash association
811	Ravenswood-Itca-Walti association
812	Ravenswood-Shagnasty-Walti association
850	Relley silt loam, 0 to 2 percent slopes*
854	Relley silt loam, frequently flooded, 0 to 2 percent slopes*
910	Rutab loam, 0 to 2 percent slopes*
931	Shagnasty-Roca-Rock outcrop association
932	Shagnasty-Softscrabble association
942	Shiley silt loam, occasionally flooded, 0 to 2 percent slopes*
950	Silverado sandy loam, 0 to 2 percent slopes*
990	Sonoma-Wendane association
998	Sonoma-Paranat association
999	Sonoma-Wendane-Paranat association
1011	Stampede-Handy-Cariwe association
1041	Tenabo Orovada-Buttaran association
1042	Tenabo-Ricert-Desatoya association
1092	Tulase-Bubus-McConnel association
1131	Fortank gravelly loam, 4 to 8 percent slopes
1140	Wendane silt loam, frequently flooded*
1141	Wendane-Umlerland association
1142	Wendane-Gund association
1143	Wendane silt loam, occasionally flooded*
1145	Wendane-Playas association
1146	Wendane-Sonoma-Valmy association
1148	Wendane-Bubus association
1169	Whirlo-Broyles association
1173	Wholan silt loam, alkaline*
1177	Wholan-Rasille association, alkaline
1178	Wholan-Rasille association, nonalkaline
1281	Ricert-Whirlo-Pineval association
1282	Ricert-Broyles association
1284	Ricert-Zineb-Pineval association
1285	Ricert-Bubus-Broyles association
1286	Ricert-Tenabo-Broyles association
1287	Ricert-Orovada-Broyles association
1288	Ricert-Orovada-Tenabo association
1289	Ricert Blackhawk-Orovada association
1371	Chad-Gando-Softscrabble association
1450	Atlow-Stingdorn association
1600	Dumps and pits
1670	Wieland-Allor association
1680	Zineb gravelly loam, 2 to 8 percent slopes
1681	Zineb-Chiara-Wieland association
1682	Zineb-Orovada association
2003	Unius-Orovada association
2010	Glyphs-Silverado association
2011	Glyphs-Muni association
2012	Glyphs-Muni-Orovada association
2015	Glyphs-Enko association
2021	Rotinom-Wholan association
2022	Rotinom-Orovada association
2031	Muni-Orovada-Unius association
2060	Oxcorel-Beoska-Whirlo association
2061	Oxcorel-Zaidy-Grassval association
2063	Oxcorel-Pineval association
2069	Oxcorel-Wieland-Spasprey association
2081	Fenster-Jesse Camp association
2088	Punchbowl-Jung-Teguro association
2089	Punchbowl-Jung-Locane association
2090	Punchbowl gravelly loam, 4 to 15 percent slopes
2091	Punchbowl-Teguro-Sumine association
2092	Punchbowl-Belate-Reluctant association

SYMBOL	NAME
2093	Punchbowl-Rock outcrop association
2094	Punchbowl-Simpark-Akerue association
2095	Punchbowl-Robson-Rock outcrop association
2096	Punchbowl-Locane-Nobuck association
2097	Punchbowl-Itca association
2099	Punchbowl-Roca-Rock outcrop association
2100	Grassval-Grima-Unsel Variant association
2101	Grassval-Oxcorel association
2102	Grassval Wieland association
2104	Grassval-Punchbowl association
2105	Grassval-Glyphs-Muni association
2110	Isolde-Davey association
2540	Buttaran-Wieland association
2541	Buttaran Zoesta association
2542	Buttaran-Chiara association
2543	Buttaran-Spasprey-Allor association
2545	Buttaran-Pineval association
2546	Buttaran-Spasprey-Locane association
2547	Buttaran-Desatoya association
2548	Buttaran-Tenabo-Pineval association
2554	Laped-Hooplite-Osoll association
2555	Laped-Colbar association
2570	Colbar-Atlow-Burrila association
2603	Grima-Genaw association
2640	Rasille Kelk association
2672	Zoesta Variant-Jung-Trunk association
2681	Tessfive-Puett-Grima association
2683	Tessfive-Genaw Orovada association
2684	Tessfive-Perfor-Orovada association
2690	Itca Variant-Reluctant-Handy association
2730	Pula-Spike-Buttaran association
2731	Pula-Spike association
2740	Spike-Desatoya Variant-Grassval association
2771	Kram-Hopeka-Rock outcrop association
2780	Desatoya-Tenabo-Pineval association
2781	Desatoya-Orovada association
2782	Desatoya-Pineval-Grassval association
2783	Desatoya, steep Spike-Desatoya association
2791	Old Camp-Colbar-Rock outcrop association
2792	Old Camp-Allor-Puett association
2793	Old Camp-Laped association
2797	Old Camp, steep-Colbar-Old Camp association
2798	Old Camp-Atlow-Osoll association
3001	Barner-Kobeh association
3011	Defler Orovada association
3050	Novacan cobbly loam, 2 to 8 percent slopes
3071	Allor-Wieland association
3072	Allor-Orovada association, moderately sloping
3073	Allor-Kelk association
3074	Allor-Orovada association, nearly level
3080	Zaidy-Allor association
3081	Packer-Packer, cobbly-Newlands association
3091	Packer-Hapgood-Rock outcrop association
3092	Packer-Layview-Hapgood association
3093	Packer-Hapgood-Torro association
3094	Hackwood-Newlands-Hapgood association
3101	Ninemile-Zoesta-Itca association
3111	Walti-Softscrabble-Chad association
3120	Walti-Softscrabble-Bucan association
3121	Walti-Sumine-Softscrabble association
3122	Walti-Softscrabble-Itca association
3123	Walti-Softscrabble-Locane association
3125	Itca-Clanalpine-Reluctant association
3130	Itca-Ninemile-Rock outcrop association
3131	Itca-Softscrabble-Cleavage association
3132	Itca-Clanalpine-Toro association
3134	Itca-Clanalpine-Rock outcrop association
3135	Itca-Roca-Reluctant association
3136	Itca-Reluctant-Walti association
3137	Sodhouse-Tenabo-Desatoya Variant association
3140	Robson-Ninemile-Ravenswood association
3151	

SYMBOL	NAME
3153	Robson-Locane-Softscrabble association
3154	Robson-Locane-Rock outcrop association
3155	Robson Itca Softscrabble association
3170	Teguro-Rubble land-Punchbowl association
3181	Newlands-Packer-Hapgood association, moderately steep
3182	Newlands-Packer-Hapgood association, strongly sloping
3190	Softscrabble-Clanalpine-Walti association
3192	Softscrabble-Walti-Cleavage association
3200	Dewar gravelly loam, 2 to 8 percent slopes
3210	Typic Argixerolls-Torripsammentic Haploxerolls-Glean association
3231	Stingdorn, steep-Stingdorn-Hooplite association
3251	Caphor-Tenabo-Spasprey association
3252	Caphor-Batan-Unsel association
3253	Caphor-Caphor, moderately saline association
3270	Koyen fine sandy loam, 2 to 4 percent slopes
3310	Spasprey-Allor association
3312	Spasprey-Buttaran-Orovada association
3314	Spasprey-Allor-Orovada association
3341	Halacan-Hatur-Rock outcrop association
3342	Halacan-Hapgood-Granzan association
3411	Zoesta-Robson-Softscrabble association
3415	Zoesta-Handy association
3417	Zoesta-Roca-Softscrabble association
3421	Belate-Softscrabble-Torro association
3422	Belate-Robson-Torro association
3423	Belate Cleavage-Softscrabble association
3450	Reluctant-Robson-Cleavage association
3453	Reluctant-Locane-Itca association
3455	Reluctant-Roca-Colbar association
3457	Reluctant-Clanalpine-Roca association
3461	Torro-Rubble land Cleavage association
3462	Torro-Reluctant-Cleavage association
3463	Torro-Clanalpine Itca association
3464	Torro-Itca-Softscrabble association
3465	Torro-Clanalpine-Softscrabble association
3562	Locane-Coztur-Punchbowl association
3563	Locane-Muni-Locane, eroded association
3625	Minat-Coztur-Belate association
3690	Izod-Koynek-Rock outcrop association
3740	Kelk silt loam, saline
3741	Kelk-Settlemyer association
3742	Kelk-Ocala association
3840	Jung-Newpass association
3841	Jung-Itca-Roca association
3842	Jung-Hooplite association
3843	Jung-Newpass-Teguro association
3845	Jung-Stingdorn-Atlow association
3846	Jung-Atlow-McVegas association
3847	Jung-Old Camp-Clanalpine association
3848	Jung-McVegas-Enko association
3851	Decram-Hapgood association
3852	Decram-Hapgood-Chad association
3861	Duco-Itca-Roca association
3863	Duco-Clanalpine-Jung association
3881	Layview-Packer-Hapgood association
3891	Labshaft-Hapgood-Rock outcrop association
3950	Hooplite-Jung-Izod association
3951	Hooplite-Old Camp-Puett association
3952	Pineval-Stingdorn association
3960	Pineval gravelly loam, 2 to 4 percent slopes*
3961	Pineval-Orovada-Beoska association
3964	Pineval-Orovada association
3990	Settlemyer fine sandy loam, drained, 0 to 2 percent slopes*
3991	Settlemyer-Pineval association
3992	Settlemyer complex*
4041	Hymas-Xine-Attella association
4070	Genaw-Wieland-Grima association
4072	Genaw-Orovada-Puett association
4073	Genaw-Broyles-Perfor association
4140	Welch loam, drained, 2 to 8 percent slopes

\*Narrowly defined map units. Other map units are broadly defined.

CONVENTIONAL AND SPECIAL  
SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

National, state or province	-----
County or parish	-----
Minor civil division	-----
Reservation (national forest or park, state forest or park, and large airport)	-----
Land grant	-----
Limit of soil survey (label)	-----
Field sheet matchline and neatline	-----
AD HOC BOUNDARY (label)	-----
Small airport, airfield, park, oilfield, cemetery, or flood pool	-----
STATE COORDINATE TICK	-----
LAND DIVISION CORNER (sections and land grants)	-----
ROADS	-----
Divided (median shown if scale permits)	=====
Other roads	=====
Trail	-----
ROAD EMBLEM & DESIGNATIONS	-----
Interstate	-----
Federal	-----
State	-----
County, farm or ranch	-----
RAILROAD	-----
POWER TRANSMISSION LINE (normally not shown)	-----
PIPE LINE (normally not shown)	-----
FENCE (normally not shown)	-----
LEVEES	-----
Without road	-----
With road	-----
With railroad	-----
DAMS	-----
Large (to scale)	-----
Medium or Small	-----
PITS	-----
Gravel pit	-----
Mine or quarry	-----

MISCELLANEOUS CULTURAL FEATURES

Farmstead, house (omit in urban areas)	•
Church	•
School	•
Indian mound (label)	Indian Mound
Located object (label)	Tower
Tank (label)	• Gas
Wells, oil or gas	•
Windmill	•
Kitchen midden	•

WATER FEATURES

DRAINAGE

Perennial, double line	=====
Perennial, single line	=====
Intermittent	=====
Drainage end	=====
Canals or ditches	=====
Double-line (label)	=====
Drainage and/or irrigation	=====

LAKES, PONDS AND RESERVOIRS

Perennial	=====
Intermittent	=====

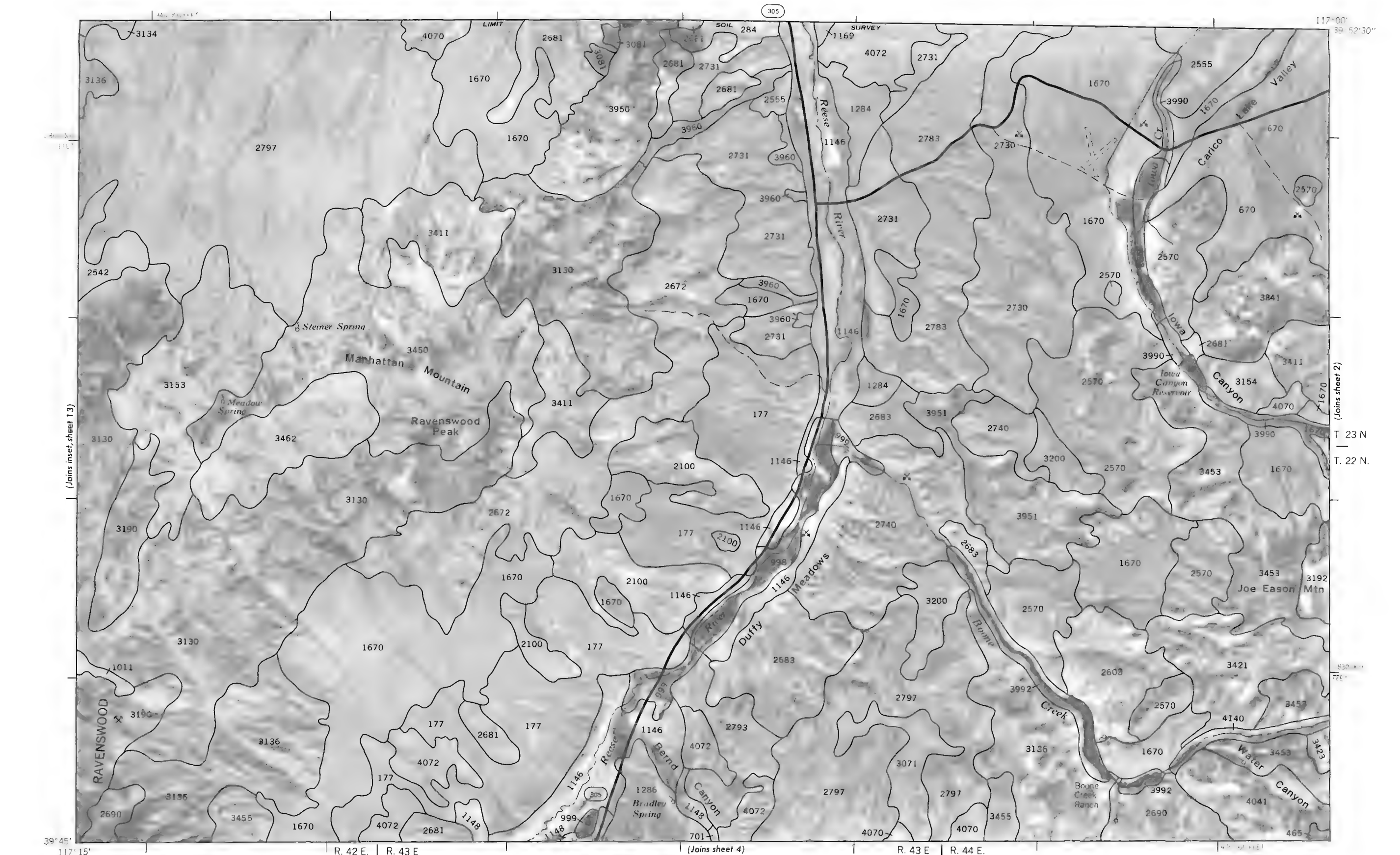
MISCELLANEOUS WATER FEATURES

Marsh or swamp	=====
Spring	=====
Well, artesian	=====
Well, irrigation	=====
Wet spot	=====

SPECIAL SYMBOLS FOR  
SOIL SURVEY

SOIL DELINEATIONS AND SYMBOLS	637 3231
ESCARPMENTS	-----
Bedrock (points down slope)	-----
Other than bedrock (points down slope)	-----
SHORT STEEP SLOPE	-----
GULLY	-----
DEPRESSION OR SINK	-----
SOIL SAMPLE (normally not shown)	-----
MISCELLANEOUS	-----
Blowout	-----
Clay spot	-----
Gravelly spot	-----
Gumbo, slick or scabby spot (sodic)	-----
Dumps and other similar non soil areas	-----
Prominent hill or peak	-----
Rock outcrop (includes sandstone and shale)	-----
Saline spot	-----
Sandy spot	-----
Severely eroded spot	-----
Slide or slip (tips point upslope)	-----
Stony spot, very stony spot	-----
Durorithic Tornorthents with fourwing saltbush (up to 5 acres)	-----
Gravel stringers (up to 5 acres)	-----
Pachic Cryoborolls with aspen woodland vegetation (up to 5 ac.)	-----
Sand dunes (up to 5 ac.)	-----
Lithic Cryoborolls with mountainmahogany vegetation (1 to 5 acres)	-----





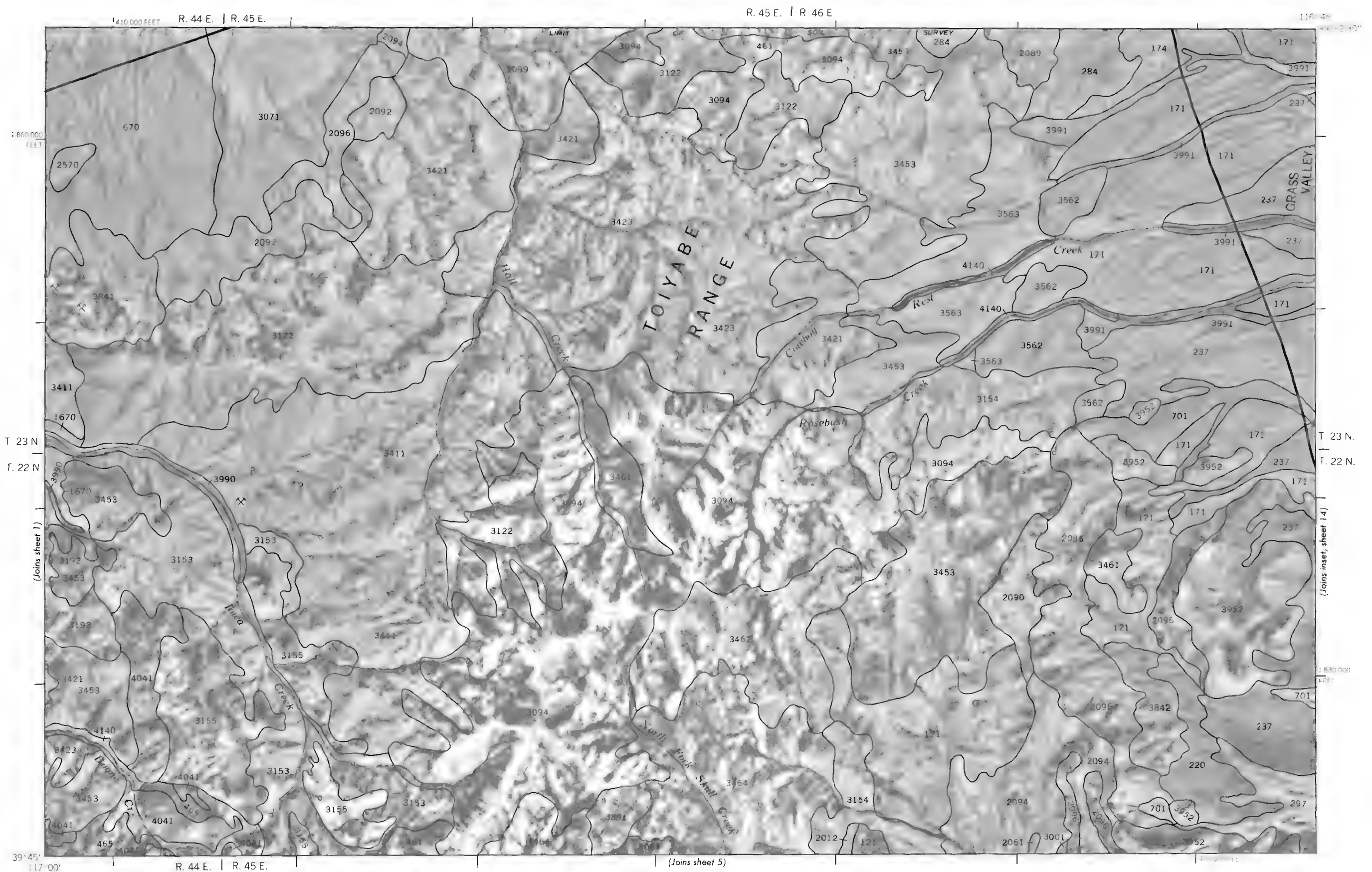
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3000 Meters 2000 1000 0 1 2 3 Kilometers

LANDER COUNTY-SOUTH PART, NEVADA NO. 1



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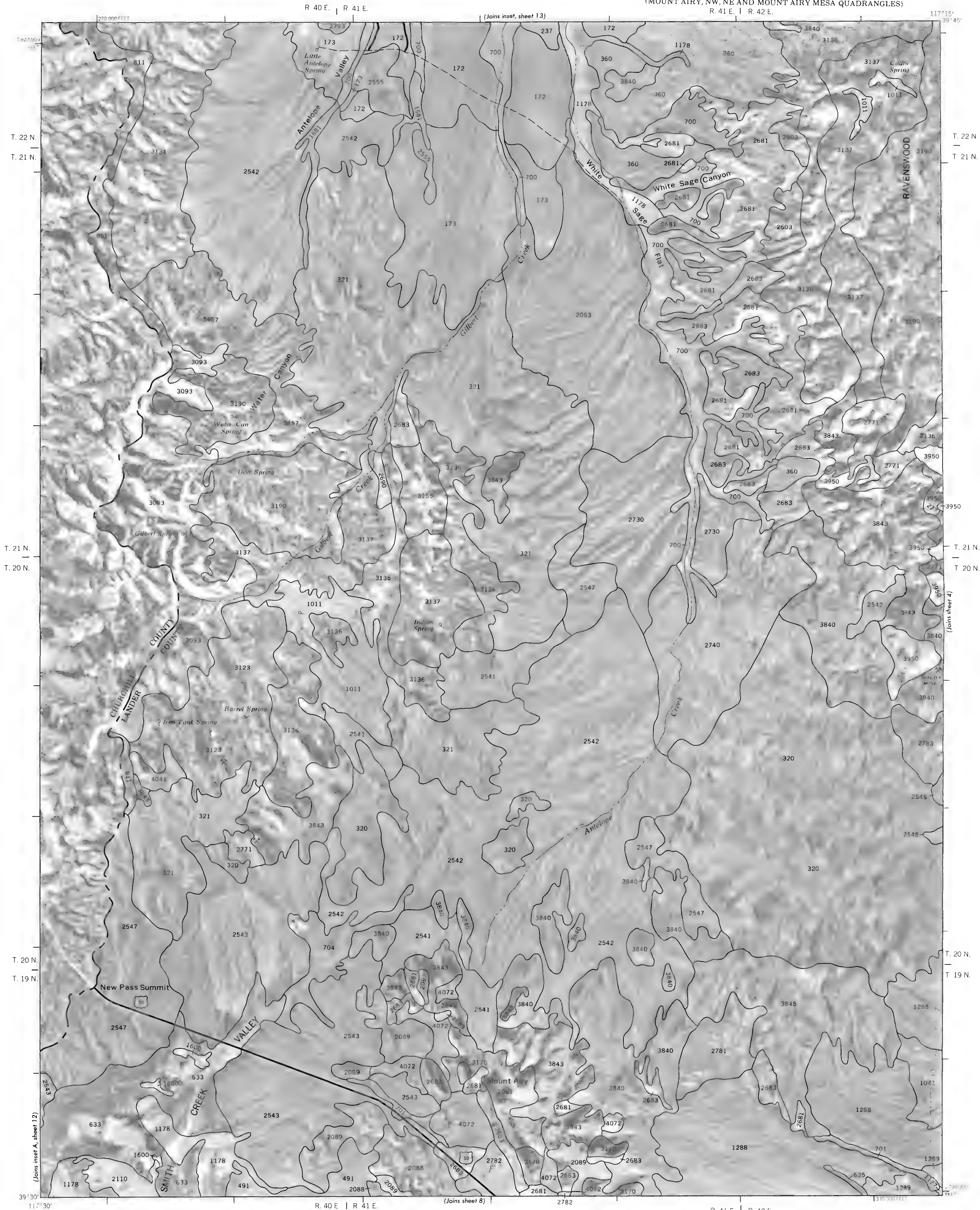
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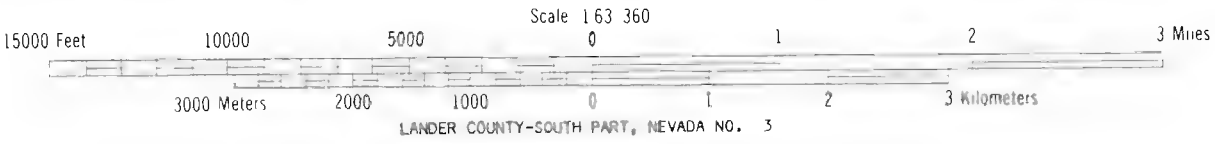
LANDER COUNTY-SOUTH PART, NEVADA NO. 2

SHEET NO 2 OF 14

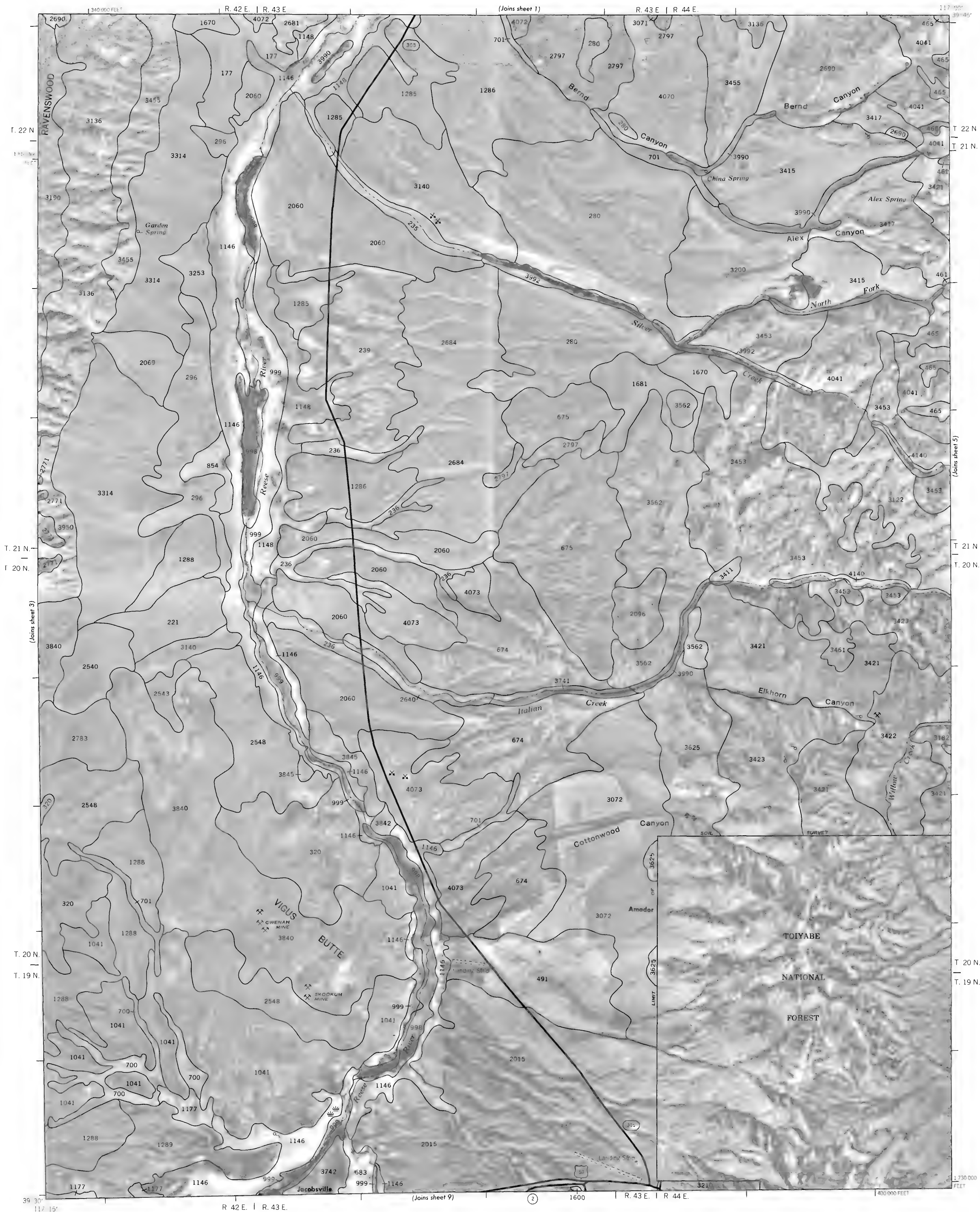




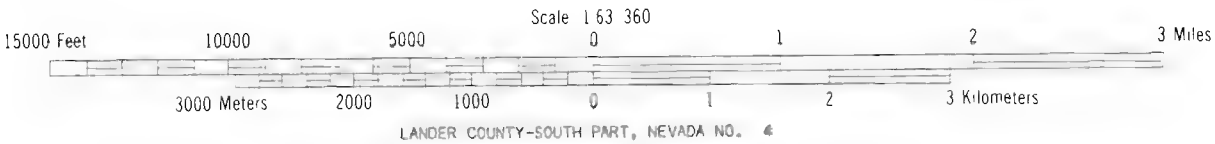
This map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies on 1974 - 1978 orthophotography obtained from the U.S. Department of the Interior, Geological Survey



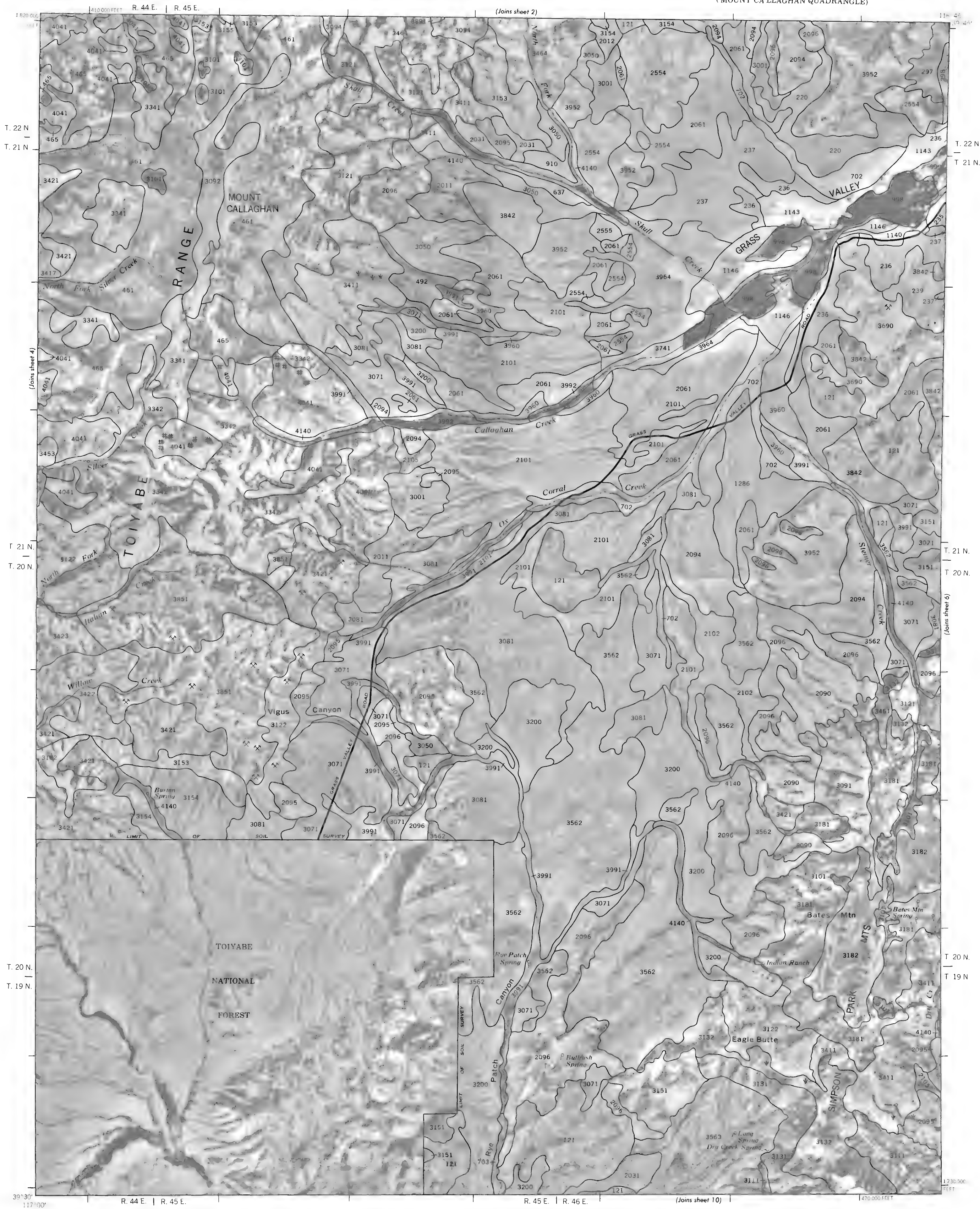




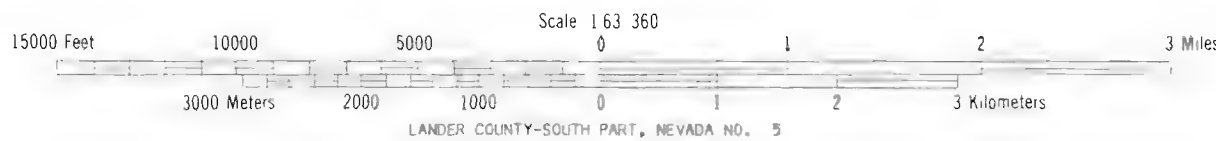
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SHEET NO 5 OF 14

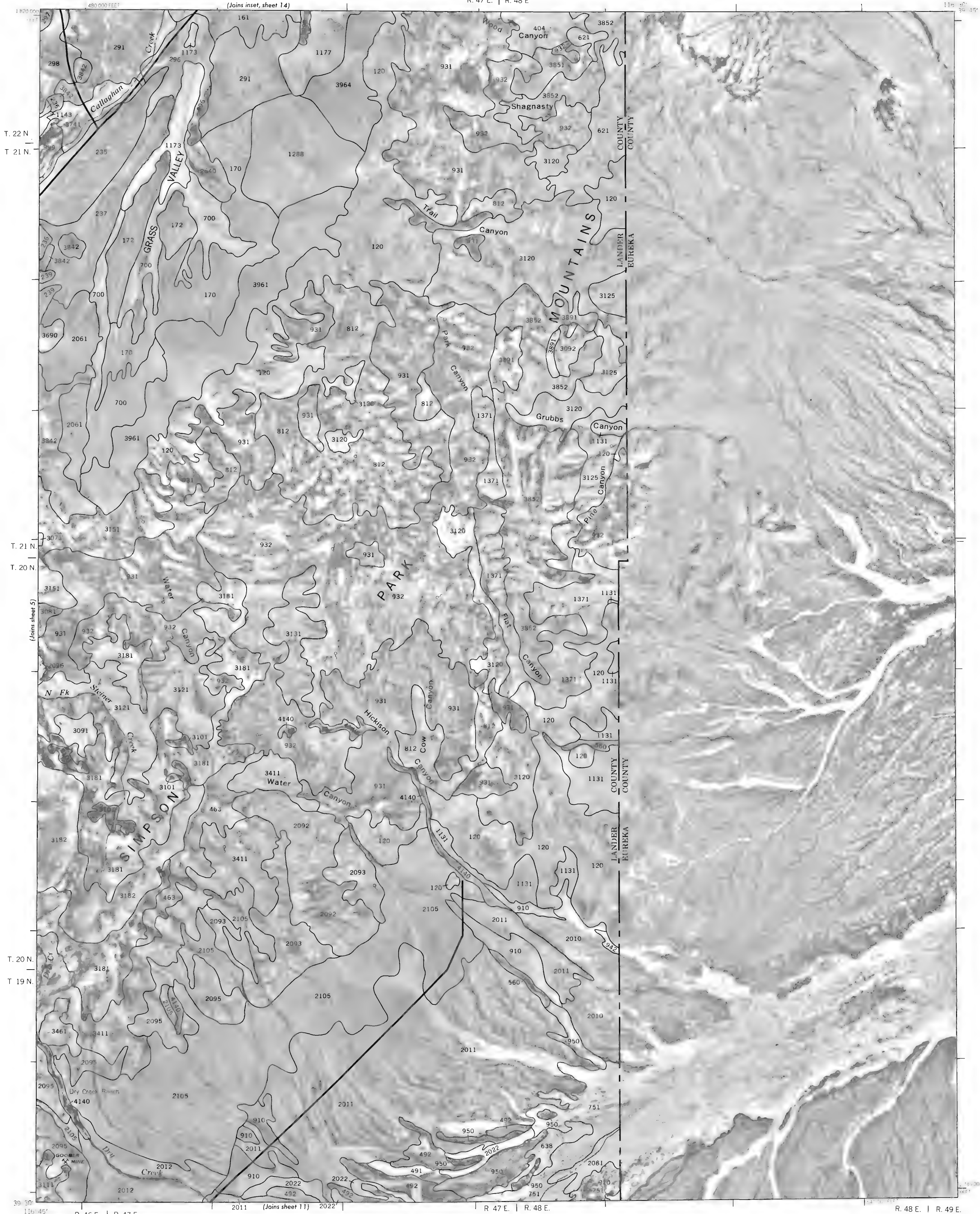
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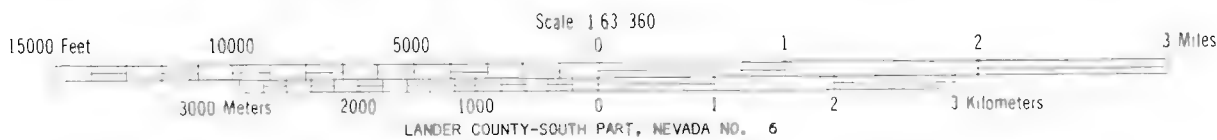
R. 46 E | R. 47 E.

R. 47 E. | R. 48 E

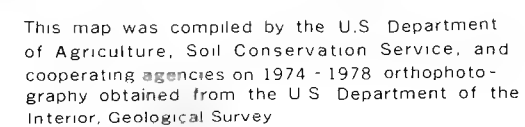
(ACKERMAN CANYON QUADRANGLE)



This map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies on 1974 - 1978 orthophotography obtained from the U.S. Department of the Interior, Geological Survey.



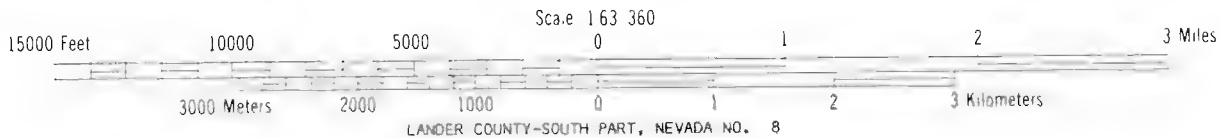




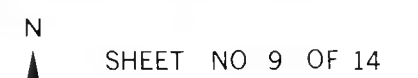
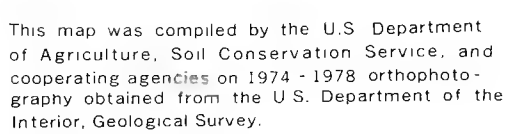




This map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies on 1974 - 1978 orthophotography obtained from the U.S. Department of the Interior, Geological Survey











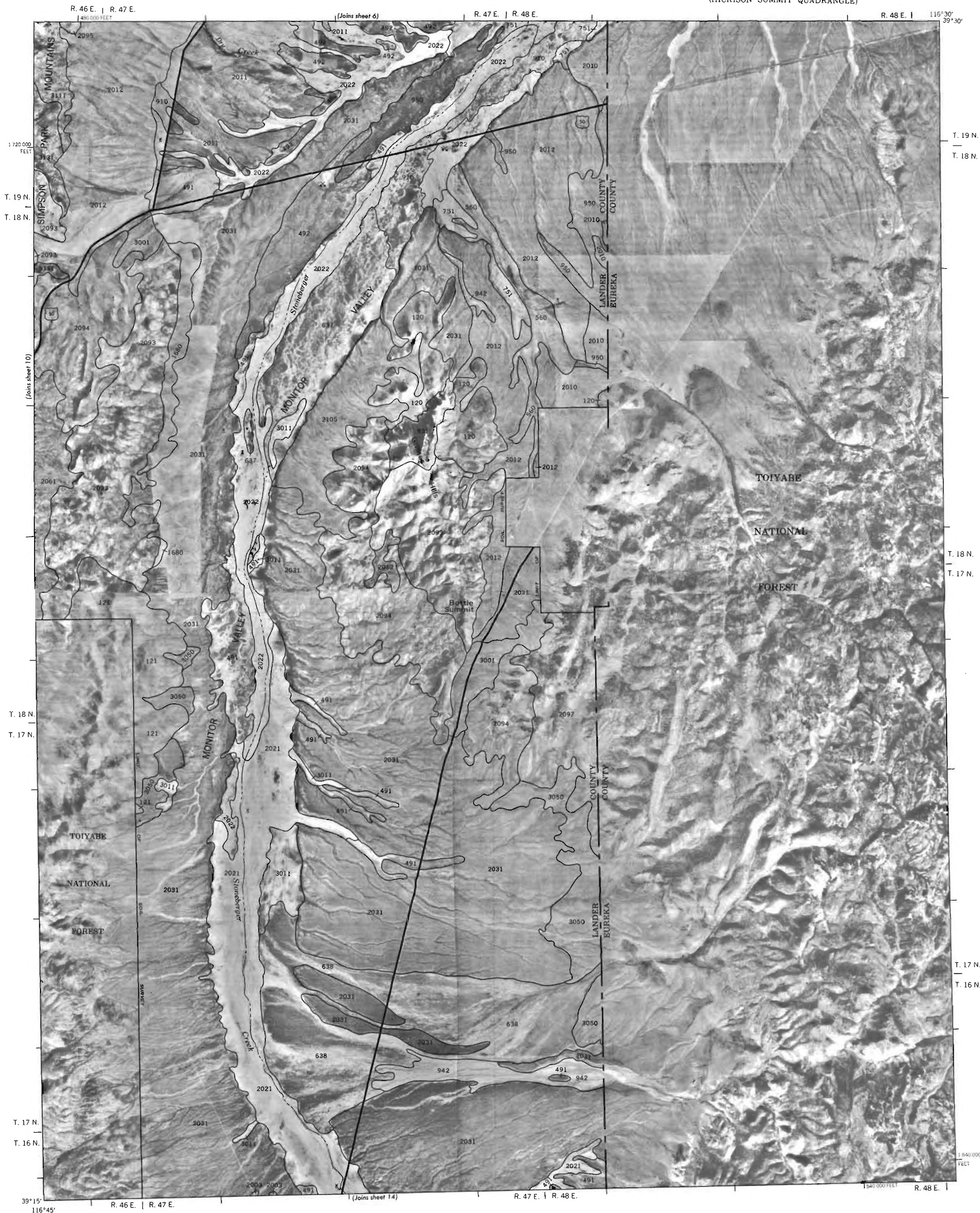
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3000 Meters 2000 1000 0 1 2 3 Kilometers

LANDER COUNTY-SOUTH PART, NEVADA NO. 10

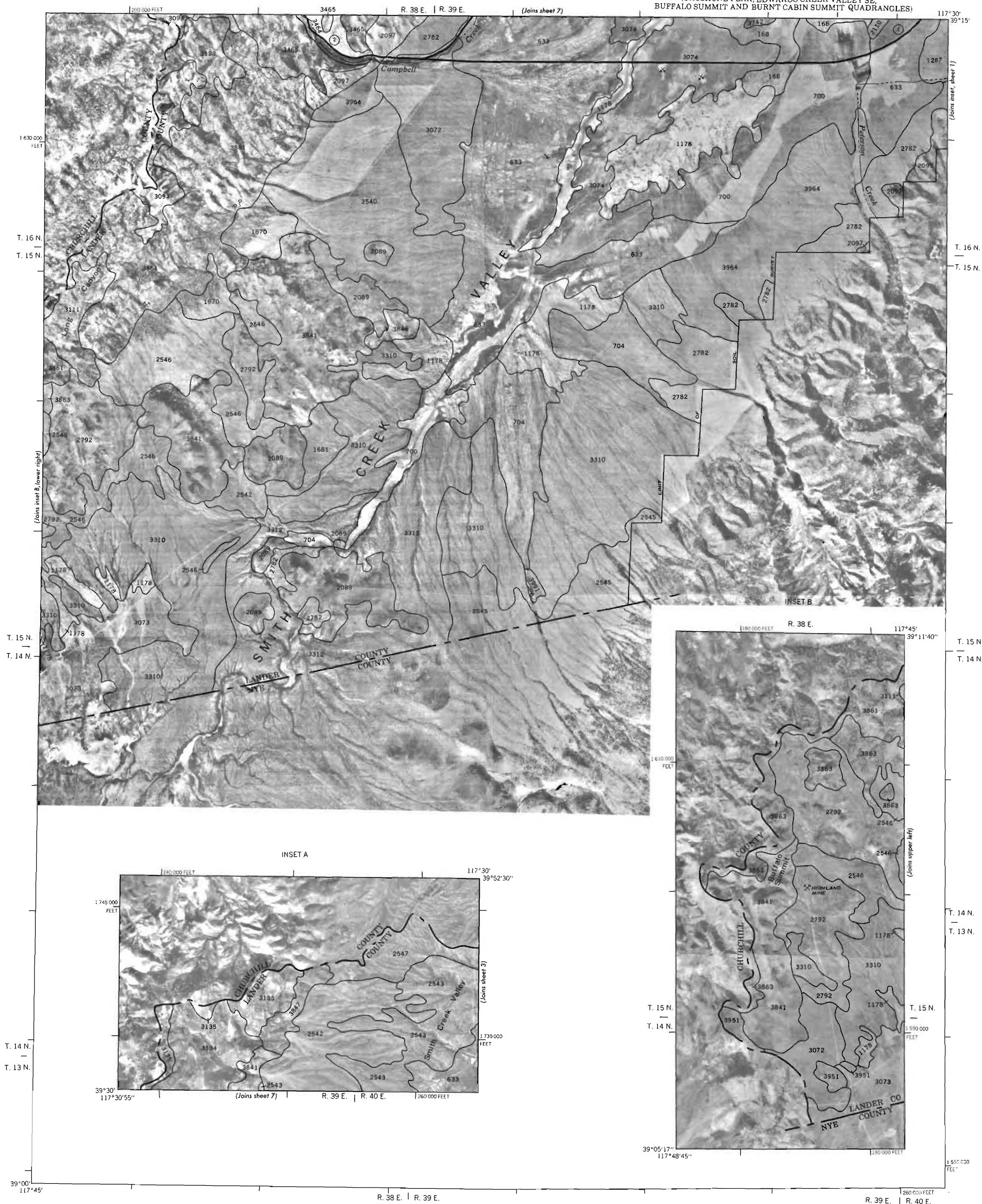
SHEET NO 10 OF 14



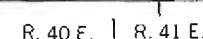




(SHOSHONE PEAK, EDWARDS CREEK VALLEY SE,  
BUFFALO SUMMIT AND BURNT CABIN SUMMIT QUADRANGLES)

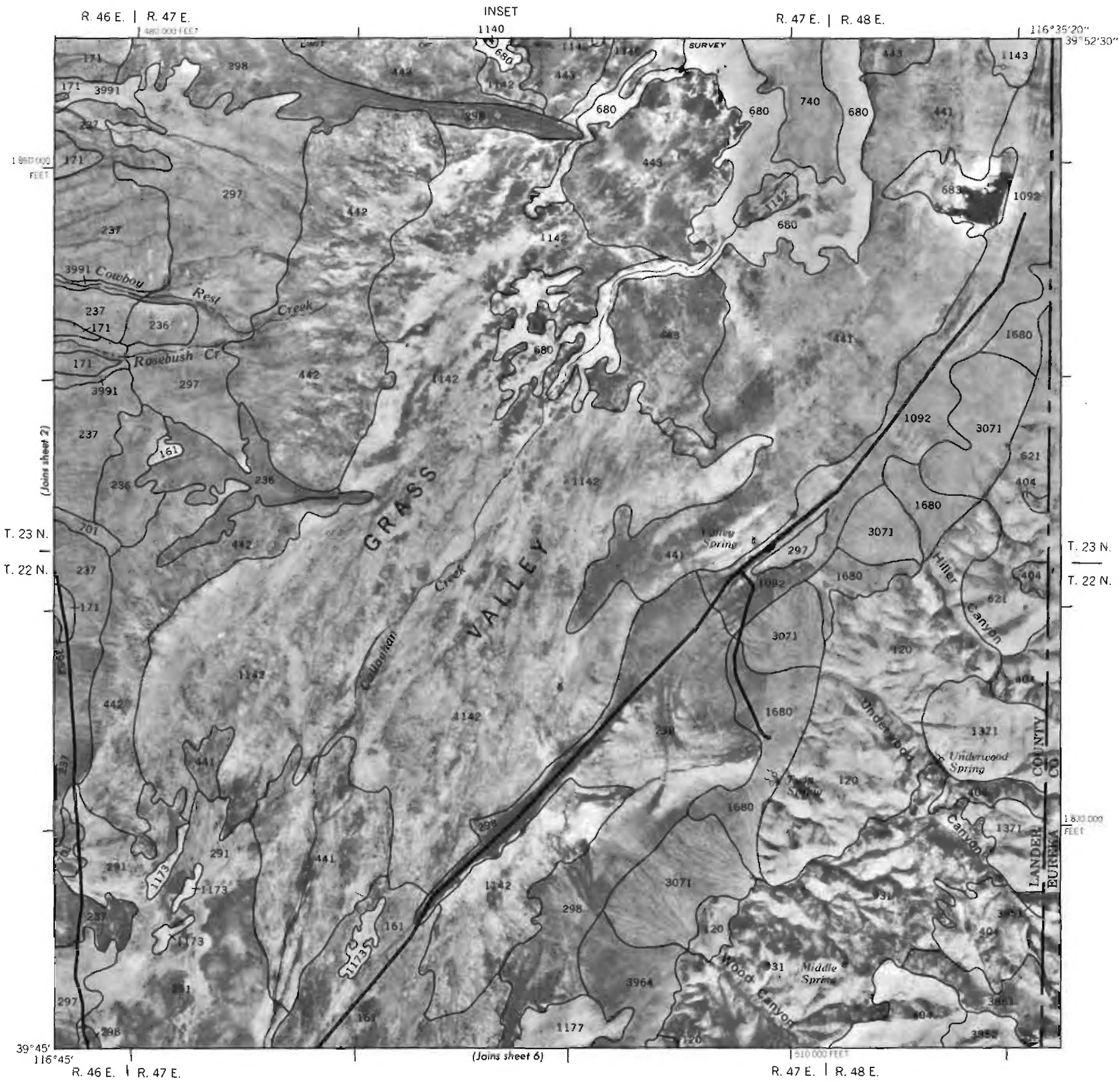
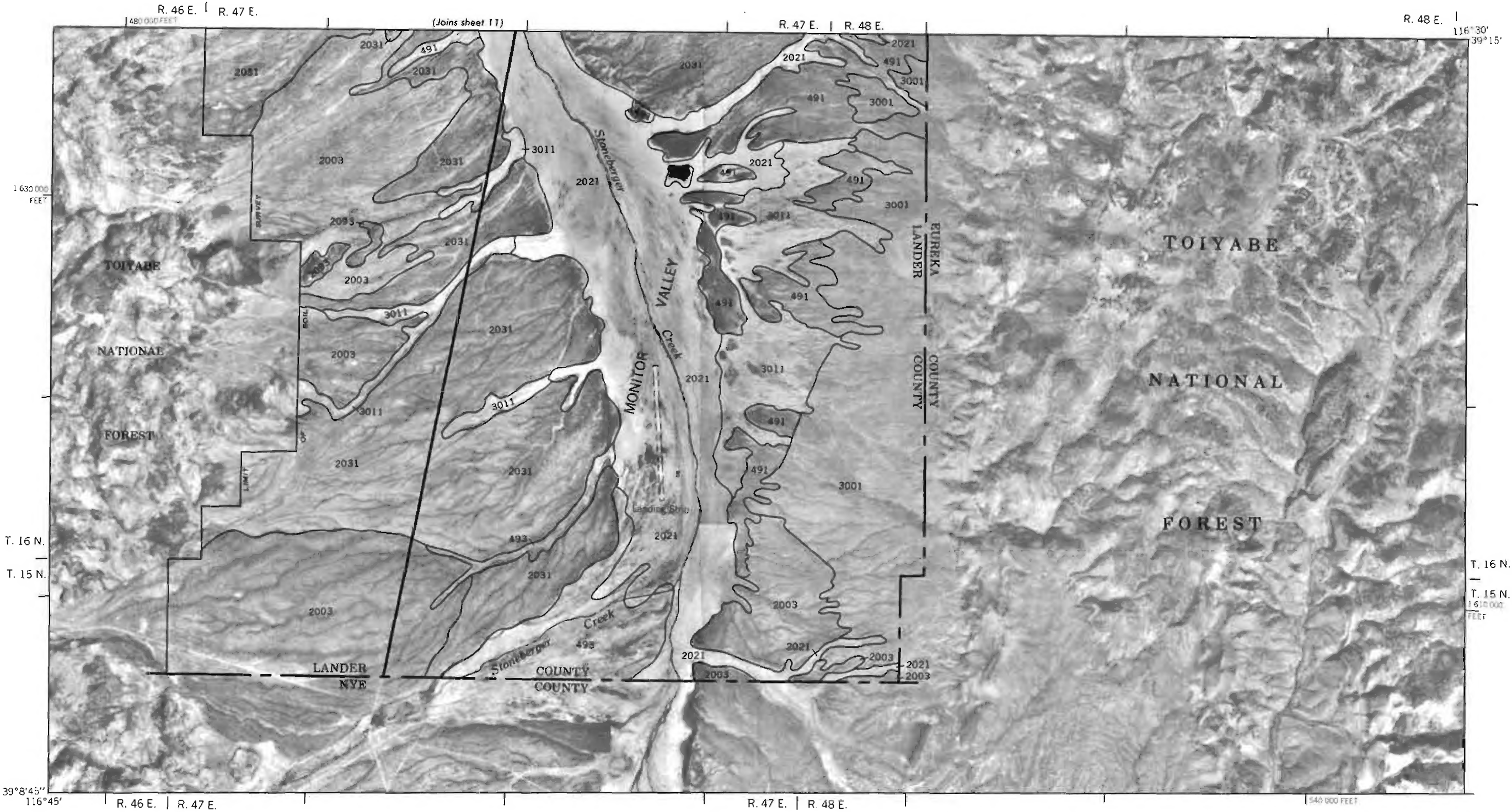




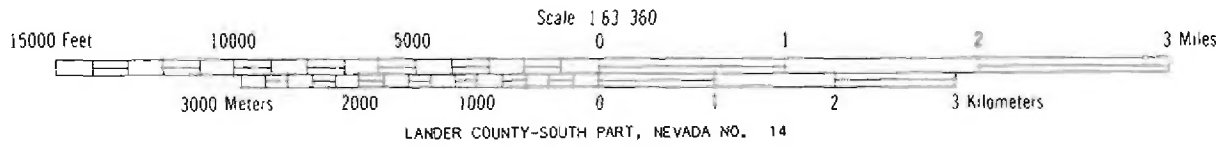


SHEET NO 13 OF 14





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LANDER COUNTY-SOUTH PART, NEVADA NO. 14

